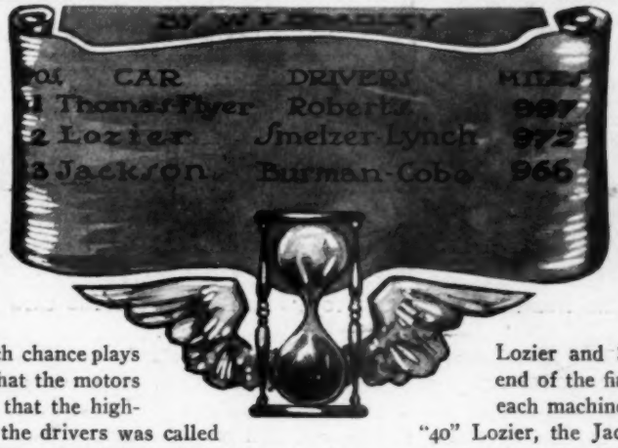
VOL. XVII. NEW YORK—THURSDAY, AUGUST 15, 1907—CHICAGO No. 7

THE AUTOMOBILE

Winning of A 24 Hour Record Race



IN winning the 24-hour track race at Brighton Beach with a Thomas Flyer stripped touring car Montague Roberts achieved a double victory by carrying the one-car, two-drivers track record from 833 to 997 miles and staying at the wheel during the entire contest. Although it would be easy to criticise a race of this nature on the ground of sensationalism, the absence of a uniform basis for competitors and the large part which chance plays in a track event, no one will deny that the motors were put to a very severe test and that the highest skill and daring on the part of the drivers was called for. Harry S. Houpt has shown his appreciation of the clever work of his winning driver by offering to put Roberts through an engineering course at Stevens Institute.

Starting at 10:20 o'clock on Friday evening, interest in the race was sustained until the end, and intensified at the last hour by an accident to the Jackson, which, after leading from the seventh hour, had its excellent record marred when victory seemed certain, though tires and a contrary tail-light had caused Roberts the loss of not a few miles. A 40-horsepower Lozier, driven alternately by Smeltzer and Lynch, secured second place with 972 miles, and Burman and Cobe's Jackson, laid up on the outer edge of the track when time was called, took third place with 966 miles. All three broke the track record made by the Jackson at the St. Louis meet.

Mitchell, of lower horsepower and somewhat slower than its competitors, ran a consistent race, finishing in fourth position with 774 miles. These four were the only machines on the track when time was called after twenty-four hours' running. Darracq with 774 miles and Delahaye with 720 were undergoing adjustments at their stands when the race ended. All others, with the exception of the Studebaker, a late starter, and at no time a candidate for first position, had definitely abandoned the contest. Out of fifteen official starters, six only lasted to the end, leaving 60 per cent. unable to stand the 24-hour strain.

THE usual roar of open exhausts, the hustling of officials, then the crack of a pistol, and fifteen stripped touring machines—eleven of them American, four French—shot over the line and rushed ahead on the mile track for honors in the 24-hour Brighton Beach automobile derby. In the dim light Knepper's Frayer-Miller tried to jump ahead, but was so closely followed by Michener's Lozier and Sturewald's Oldsmobile that at the end of the first hour it was a three-cornered try, each machine having 46 miles to its credit. The "40" Lozier, the Jackson, the Delahaye and the Pilain hung very close to the leaders, all of them with mileages above 40—a fair record for a standing start.

For a dozen rounds Starter Wagner was busily employed flagging machines without tail lights. Matheson was the first to lack illumination; Dietrich had to stop early on this account, and before thirty miles had been run off probably half a dozen cars had lost some time lighting up in the rear. In the center of the ring, where tire and repair stations had been erected for the competitors, business began early. Dietrich, after a round on three cylinders, rushed into the center and was surrounded by a group of French mechanics, who changed a blown-out gasket and put in an additional supply of lubricating oil. Stoddard-Dayton was early in for fresh tires, and for nearly four hours was laid up waiting for a new rim.

At midnight the Frayer-Miller had got a strong lead on its competitors and figured in the eyes of the numerous spectators in the grand stand as the probable winner of the race. With the distinctive roar of its four exhausts it was cheered as it went by the stands and watched with interest as round after round it went ahead of slower machines. After a time some of the others warmed up to the business and there were interesting matches between the air-cooled engine and water-cooled rivals. No. 14 Oldsmobile caught up the Frayer-Miller and passed finally on one of the bends, while for a long time Michener's Lozier ran it very

close. For three rounds the Frayer-Miller and No. 14 Oldsmobile raced neck and neck, the latter, though shaken off, refused to be beaten, came to the attack again and finally passed the more powerful machine, though not defeating it on score position.

ROBERTS, A TIRED BUT SMILING WINNER.

Early Mechanical Trouble.

Mitchell was early in trouble. Before midnight it drove to its stand and had the coil changed, a new radiator fan put in, the bracket of the original one having snapped off, and a new radiator fitted, the fan blades having caused a serious leak. Matheson, pluckily handled by J. B. Ryall with an injured knee cap, was early drawn up near the grand stand for repairs, said to be the replacing of a link in one of the driving chains.

Fuller's Dietrich came in again with its owner cursing his luck in having "brown paper gaskets." A defective igniter was also changed and the French machine went out and did some fast work for a time. Louis Strang, mechanic for Walter Christie in the Grand Prix, put in with his Pilain from Lyons and had an igniter changed also. As an example of the faulty management at the tire and repair stations, a couple of men struggled ten minutes with a dismountable rim, to discover finally that they had neglected to pay attention to the notice "put this side on first." There were numerous examples of the loss of valuable time through the lack of direction, two or three men tumbling over one another where one would have sufficed, and no one being available to give help where help was most needed. When the cars had been got away again mutual recriminations could be heard around the dimly lighted line of tents. Even the best teams were sulphurous at times.

While running fast on the fourth round, Michener, driving the 60-horse-power Lozier, got into soft sand on the outside of the track, on the curve just past the officials' stand. At this point the track was so badly lighted that it was difficult for the drivers to judge their position. Under the severe strain the Lozier drag link snapped in two and the machine, no longer under control, crashed through the hedge on the inner side of the track, coming to a stop on the grass. On striking the top rail the radiator filler cap was carried away and a little injury done to the radiator. A duplicate machine of the same model being available, the radiator and the drag link were changed. On the motor being started up, the car was found to be in good condition with the exception of the steering gear, which was so stiff that it was not considered safe to continue the race.

Some excitement was caused by a fire around the Welch car while work was being done on it at the repair station. Carelessness with a light caused a sudden flare-up before anyone could realize how it had happened. In a few minutes the burning cans were kicked away and the flames on the machine extinguished after a little damage had been done. Over an hour was lost before the car was again got on the track. Numerous idle spectators wandering aimlessly around the gasoline stations made an outbreak of fire always to be feared by their careless handling of matches.

No. 11 Darracq spent a considerable time in its paddock past the grand stands, undergoing repairs. Owing to the stripping of several teeth on a gear in the differential, a new rear axle had to be fitted. It is claimed that the defective pinion was not supplied from the factory, but was made in America, of steel which proved to be inferior in quality. Some hours later, while McCalla, a young Irish driver, new to American track racing, was doing some fine speeding with the Darracq, a rival machine cut in upon him very short, causing a collision, which smashed a front spring just behind the hanger.

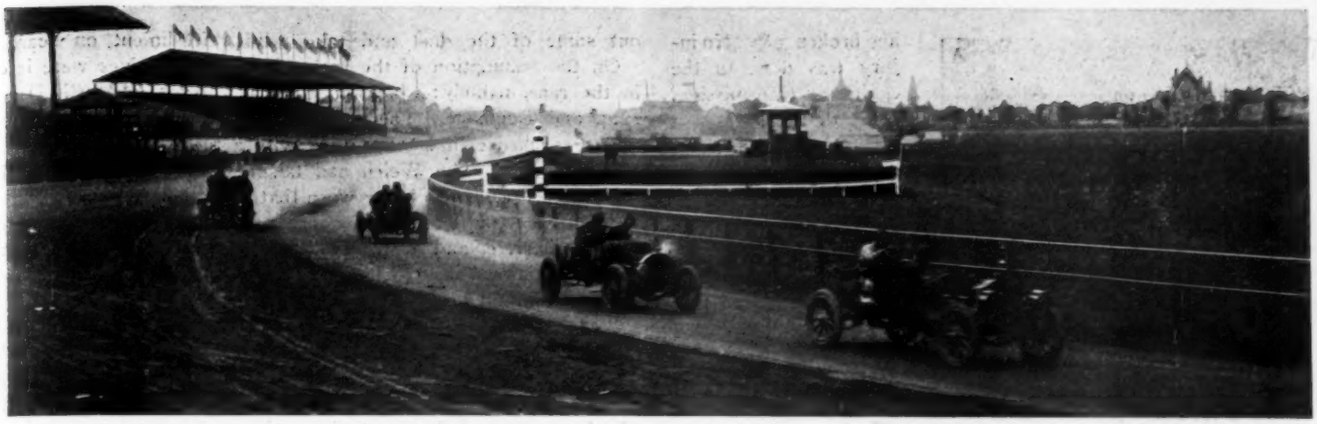
In the early morning, while Louis Strang was driving No. 10 Pilain, a French product, on the straight home stretch, the left front wheel of the car suddenly collapsed after a slight skid. At the time of the accident the machine was nearing the opening into the paddocks, Strang driving, according to his custom, as close to the rail as possible. The car dashed onto the grass, carrying away a few yards of the railing, and ran a couple of hundred yards on three wheels before pulling up. On the Pilain the throttle lever is in the center of the steering wheel, and owing to its tendency to close down and the difficulty in such a position of holding it open, the driver had taped it in wide-open position.

ROBERTS COOLING HIS DIAMOND TIRES.

"JACKSON" COBE'S DIRTY FACE.

THE CAMP OF THE CONTINENTAL TIRES.

"HARRIS OIL," BAILEY AND RACE MANAGER PICKENS FEEDING LOZIER PILOT.



THOMAS, JACKSON, LOZIER, AND WELCH ROUNDING THE LOWER TURN DURING THE MORNING HOURS ON SATURDAY.

It was impossible to unfasten the tape immediately and equally difficult to get out the clutch, which accounts for the machine traveling so far after the wheel broke. Six people standing near the railing—the inside of the track was forbidden to spectators—were more or less seriously injured by the flying wheel and railings. Without delay a car was sent to New York for a new front axle, and in less than three hours the machine was on the track again. A serious crack had been made in the forward end of the frame as the result of the accident, and when this was noticed by one of the officials the machine was ordered to quit. Strang then alternated with Mongini on the Delehaye.

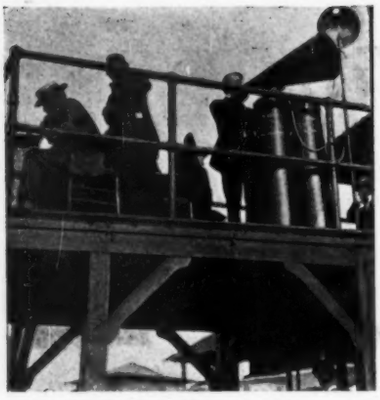
No. 17 Stoddard-Dayton, after doing some work on the rear axle and finally obtaining the rim which had put it out of the running for several hours, went out again in the early morning and was followed by No. 15 Oldsmobile, in for a repair to radiator. A little later the Olds was back again, when the radiator was taken down and the leaky tubes carefully soldered.

Daybreak came as a relief to every driver on the track, for, owing to the insufficient lighting, driving had become very dangerous. F. O. Fuller, at the wheel of the Dietrich, complained more than the others of the state of the track, his position indeed being serious, for the only lights he had were oil lamps attached to the dashboard. Several drivers tried to impress on the officials the necessity of putting more lights around the course, but it was not done. The day brought disaster to the Frayer-Miller, for after it had run off 269 miles and was leading by a fair margin, a front tire blew off the rim, causing the machine to turn completely around and crash through the outer hedge. The forward cross member of the frame was bent inwards, the forward ends of the frame bent and the bolts holding the starting handle bear-

POSITIONS HOUR BY HOUR IN BRIGHTON BEACH 24-HOUR RACE.

CAR AND H.P.	DRIVERS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Thomas, 60	Roberts	40	83	125	...	205	250	293	343	389	414	461	509	550	590	634	673	719	752	793	839	872	913	958	997
2. Lozier, 40	Smelzer and Lynch	43	83	129	...	199	234	291	330	373	414	457	497	537	578	614	647	693	718	764	803	844	887	925	972
3. Jackson, 40	Burman and Cobe	43	84	126	170	217	262	308	354	402	450	489	532	580	615	654	691	733	779	810	848	878	920	963	966
4. Mitchell, 40	Zirbes and Hudson	32	42	76	...	149	...	226	257	300	332	366	394	424	448	461	496	530	565	602	630	661	681	707	774
5. Darracq, 50	Nuneman and McCalla	17	54	81	...	133	...	...	252	279	327	367	390	414	457	484	521	540	565	611	635	649	676	719	720
6. Delehaye, 45	Mongini and Strang	43	61	79	...	126	...	...	224	243	261	...	267	...	...	353	...	384	...	429	464	502	544	545	560
0. Oldsmobile, 35	Sturewald and Anderson	46	93	109	...	187	...	...	306	372	391	399	...	...	410	420	452	491	502	503	Withdrawn				
0. Welch, 50	Trewin and Greenwood	41	85	128	...	172	...	...	228	272	301	337	338	416	439	...	444	446	Withdrawn						
0. Mathesen, 40	Ryall and Reiffenburg	33	37	...	...	107	...	...	179	217	260	297	...	...	...	391	...	392	Withdrawn						
0. Oldsmobile, 28.20	A. Light and O. Light	33	68	95	...	112	...	...	158	172	194	...	...	...	...	222	249	271	Withdrawn						
0. Stod.-Dayton, 35	Howard and Thomason	18	34	...	...	51	...	...	...	...	190	...	...	...	...	...	216	Withdrawn							
0. Pilian, 28.32	Strang and Anderson	41	87	131	158	166	...	...	...	219	Withdrawn														
0. De Dietrich, 50	Fuller	21	60	...	...	160	...	228	265	311	Withdrawn.														
0. Frayer-Miller, 50	Lawwell and Knepper	46	94	143	183	236	268	269	Withdrawn.																
0. Lozier, 60	Michener and Mulford	46	94	104	Withdrawn																				

READY FOR THE START OF THE GREAT 24-HOUR RACE—IT WAS NECESSARY TO PLACE SOME CONTESTANTS IN THE SECOND ROW.



ANNOUNCER PUNTY TELLS THE SCORE.

HOUPT TALKING TO ROBERTS.

REFEREE EDWARDS KEEPING SCORE.

"WAG" ASLEEP AT THE SWITCH—CAMACHO ON THE JOB.

ing broken off. No injury was done to the engine or transmission. Most of the spectators having left the track, it was not until late in the day that the failure of the favorite was heard of by the public.

Frayer-Miller out, Jackson went into first position, with the Thomas and the Lozier hanging fairly close. All Saturday morning the three remained in the same relative position, the Lozier once getting up to the mileage of the Thomas, then dropping back to its previous place. Mitchell, after the radiator trouble of the night, did some very steady and consistent driving, working up to the leaders by sheer regularity of running. No. 14 Oldsmobile did some fast work at times, gaining a lot of the lost mileage of the night. The Dietrich cracked the two rear cylinders early in the morning and occupied a stationary position in the paddock for the rest of the day.

After having changed a driving shaft, broken through colliding with a car, the Darracq again made a spectacular display. McCalla, who handled the automobile most of the time, passed every machine on the course at intervals, but had too great a previous loss and had too frequently to leave the track for adjustments to hope to get entirely to the front.

At 5:30 o'clock Saturday evening the race was called off for nearly an hour to allow of the sprinkling of the track, which had become so dusty that driving on the curves was really dangerous. No work could be done on the machines, but drivers took advantage of the interval to wash out some of the dust and take solid refreshment on board.

On the resumption of the racing only six machines were left in the race, namely: Jackson, Thomas, Lozier, Mitchell, Darracq, and Delahaye. The two Oldsmobiles had gone out, one with a cracked cylinder, the other with a radiator which refused to hold water. The Welch had taken down its crankcase and discovered bearings so badly worn that it did not start again; the Stoddard-Dayton was waiting for a new transmission which failed to arrive, and J. B. Ryall had given official notice that owing to his own injured leg and the tired condition of his companion he would not continue any further.

Numbers Diminished, but Interest Increased for Final Dash.

Thomas, Lozier and Jackson were closely bunched for the final evening dash. About 7:30 o'clock Jackson lost a certain amount of mileage through having to leave the track to change a valve, the spring having broken and damaged the valve stem. Mitchell lost some time through the breaking down of the wooden platform on which were carried the storage batteries. Mongini, driving the Delahaye from Paris, lost a lot of time through trifling matters. One of the driving chains broke twice, eight new tires had to be put on during the afternoon, a single tire sometimes occupying half an hour; then the gasoline tank broke loose and had to be tied up with rope. On breaking loose later, a tank from the Pilain was put in its place. Studebaker, though still running occasionally, was out of the contest.

A most exciting contest was in progress, involving Jackson, Thomas and Lozier, when lights were lit, rendered still more exciting by the uncertainty of the lights to keep burning. The Thomas suffered particularly, its tail lights going out thrice and the car being promptly stopped by the officials to light again. Once in their anxiety to enforce the rules the Jackson car was flagged by mistake and made to slow up while all its lights were burning brightly. After a third stop to light the tail lamp of the Thomas, William McIlvrid jumped onto the rear of the car and carried a lamp in his arms to the end of the race.

At the end of the twenty-third hour Jackson was still leading, but at the beginning of the last hour began to misfire and broke down on the course, unable to reach its stand. A set screw on the timing gear had worked loose, causing a disarrangement of the gears of such a serious nature that it was recognized as impossible to get the machine going before the calling of time.

Mongini's Delahaye had gone in to change a tire during the last hour, and while there took on more gasoline. In the darkness and the confusion the cans were mixed and a certain quantity of water was poured into the tank. After every effort had been made to crank the engine, the tank and carbureter were emptied and fresh fuel put in. A few seconds before the pistol fired the motor began to roar again in healthy tones. Half a dozen yards away the Darracq was being worked upon by the driver and mechanic, the magneto causing trouble. It was not in order when the race was called off.

The Jackson traveling only three miles in the last hour, it was an easy task for the Thomas and Lozier, both of which were running excellently to the finish, to forge ahead and secure first and second places. Mitchell, the only other machine on the track at the last moment, retained fourth position, and Darracq and Delahaye followed in fifth and sixth places.

Some Features of the Handling of the Race.

Credit is due to the officers of the Long Island Automobile Club for the generally efficient manner in which the race was handled. The mechanical timing arrangement, used here for the first time and for which F. G. Webb was responsible, gave perfect satisfaction. The device consisted of a mechanical counter for each competing car fastened to a table, with the number of the machine which it recorded placed in front of it. As one timer called off the number of the car passing the judges' box another pressed the button, and an additional mile was placed to the credit of the car entitled to it. At every moment of the race the exact position of the cars could be obtained, without

hesitation or delay, and there was a pleasant alacrity in announcing positions to the press and the public.

Thanks to the efforts of Superintendent William Clare, the Brighton track, generally a poor place for fast automobiles, was put into good shape for the race. Had the lighting of the course been more brilliant and the police been more active in keeping idlers out of the center, no fault could have been found with the management of the 24-hour race. A. R. Pardington, F. G. Webb, C. J. Edwards and R. G. Kelsey, prominent among the officials of the Long Island Club, were largely responsible for the success of the meet, the business end of which was capably handled by the United States Motor Racing Association, W. H. Pickens being the leading factor. Starter Wagner and assistants Clinton and Camacho made a trio of energetic officials.

In all probability Brighton Beach will again be the scene of a 24-hour auto race this month. Conditions, as at present drafted, provide for August 23 and 24, with a team race of two cars and three drivers. The first twenty entries only will be accepted.

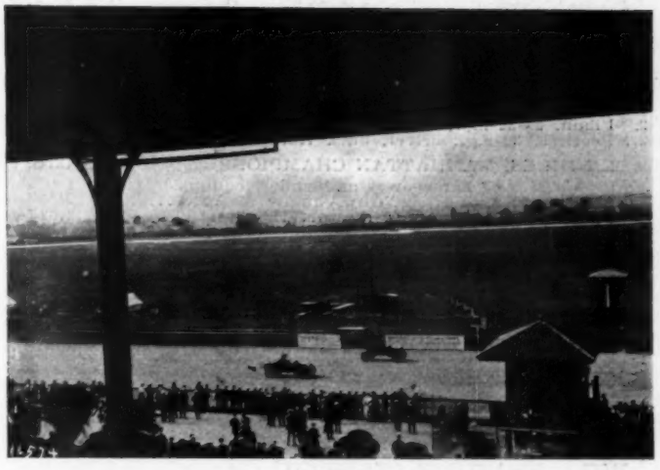
DETAILS OF THE MOST SUCCESSFUL CARS.

1. Thomas Flyer, 60-horsepower, model 1907. Four cylinders, cast separately, 5 1-2 by 5 1-2 bore and stroke, sliding gear, selective type, four speeds and reverse, double chain drive, metallic clutch, Bosch high-tension magneto and Atwater-Kent spark generator. Diamond tires.
2. Lozier, 40-horsepower, model 1907. Four cylinders cast in pairs, 4 5-8 by 5 1-2 bore and stroke, sliding gear, selective type, four speeds and reverse, double chain drive, multiple disc clutch, Bosch high-tension magneto. Diamond tires.
3. Jackson, 40-horsepower, model G, 1907. Four cylinders, cast separately, 5 by 5 inches bore and stroke, sliding gear, progressive type, three speeds forward and reverse, shaft drive, multiple disc clutch, jump spark and storage battery. Diamond tires.
4. Mitchell, 30-horsepower, model 1907. Four cylinders, cast separately, 4 1-2 by 5 inches, sliding gear, progressive, three speeds forward and reverse, shaft drive, cone clutch, ignition by jump spark. Hartford tiers.
5. Darracq, 40-horsepower, model 1907. Four cylinders, cast in pairs, 5.1 by 5.1 inches bore and stroke, sliding gear, selective type, three speeds forward and reverse, shaft drive, cone clutch. Bosch high-tension magneto, accumulator and coil. Continental tires.
6. Delahaye, 50-horsepower, model 1907. Four cylinders, cast separately, 5.5 by 5.9 inches bore and stroke, sliding gear, progressive type, four speeds forward and reverse, chain drive, cone clutch, low-tension Bosch magneto. Continental tires.

WHERE THE FRAYER-MILLER WENT THROUGH THE FENCE.

How the Wheels of the Racers Were Shod.

Diamond, Continental and Hartford supplied the tires for the competitors in the 24-hour race. Those equipped with the Diamond Company's product were Thomas, Lozier (2), Jackson, Oldsmobile (2), Stoddard-Dayton, Dietrich, Welch, Frayer-Miller, Studebaker and Matheson. Continental equipped Darracq, Delahaye and Pilain, and Hartford bandaged the Mitchell wheels.



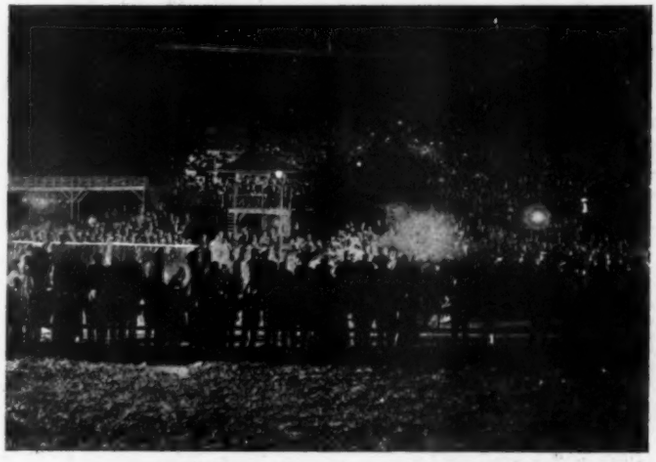
AS IT LOOKED FROM THE GRAND STAND DURING DAYLIGHT.

WHAT PRECEDED THE LONG RACE.

Walter Christie, in the front drive racer which he built for the French Grand Prix, furnished the fastest burst of speed on the Brighton Beach track by doing the mile in 54 3-5 seconds, thereby wiping out Barney Oldfield's time of 1:00 2-5, which had stood for two years. It was the first occasion the American public had had of witnessing Christie's new machine at work.

Guy Vaughn, driving a 30-horsepower Stearns, won the ten-mile contest for runabouts of 30-horsepower, and was also winner of the ten-mile Manhattan championship for runabouts of 60-horsepower and under. In the five-mile Atlantic sweepstakes Vaughn secured his third victory with a Stearns, in 5:11; J. B. Ryall, driving a Matheson, was second in 5:38 1-5; F. O. Fuller's Dietrich came third in 5:57.

Owing to the late start lights had been lit on the track before H. Michener, in a 60-horsepower Lozier, captured first place in the 100-mile championship for stock touring cars, his time being 2:06:21. A 30-horsepower Packard, driven by Stewart Elliott, came second in 2:12; Studebaker, 30-horsepower, driven by W. Dittman, covered 99 miles; Thomas, 40 horsepower, driven by William McIlvrid, traveled 98 miles, and Guy Vaughn, on a 30-horsepower Stearns, furnished 96 miles. A series of minor troubles marred the race. Guy Vaughn led for 47 miles, then lost his position through the breaking of a gasoline feed pipe. The Packard, driven by Stewart Elliott, then took first place until tire trouble put it down, and the Stearns forged ahead again, only to be set back by the breaking of a driving chain. Michener's Lozier then came ahead and won in fine style, with the Packard second, minus a rear tire for the last nine miles.



A NIGHT VIEW OF THE SPECTACULAR CONTEST.

The Dietrich and the Matheson dropped out early. The summary of the afternoon's events is as follows:

TEN MILES, RUNABOUTS, 35 HORSEPOWER AND UNDER.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....11:23
2. Pilain, 28-32-h.p.; driver, Louis Strang.....13:16 3-5
3. Peerless, 30-h.p.; driver, Jack Rutherford.....13:20 4-5

TEN MILES, MANHATTAN CHAMPIONSHIP, RUNABOUTS. 60 horsepower and under, equipped.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....12:01 1-5
2. Packard, 30-h.p.; driver, Stewart Elliott.....12:02 1-5

FIVE MILES, ATLANTIC SWEEPSTAKES, OPEN.

1. Stearns, 30-h.p.; driver, Guy Vaughn.....5:11
2. Matheson, 50-h.p.; driver, J. B. Ryan.....5:28 1-5
3. De Dietrich, 30-h.p.; driver, F. O. Fuller.....5:57

100 MILES, STOCK TOURING CARS AND RUNABOUTS, 60 H.P. AND UNDER.

1. Lozier, 60-h.p.; driver, H. Michener.....2:06:21
2. Packard, 30-h.p.; driver, Stewart Elliott.....2:12
3. Studebaker, 30-h.p.; driver, W. Dittman (covering 99 miles).
4. Thomas, 40-h.p.; driver, W. McIlvrid (covering 98 miles).
5. Stearns, 30-h.p.; driver, Guy Vaughn (covering 96 miles).

WILL FEATURE STRIPPED CHASSIS RACERS.

BOSTON, MASS., Aug. 12.—Active preparations are being made for what will mark a departure in the annals of track racing in this country at the meet to be held on the Readville track on Labor Day, September 2. In the first place, the card will be made up almost entirely of long-distance races, and secondly, the feature of the meet is to be a stripped-chassis race on much the same order as the event planned to follow the Vanderbilt race here, had the latter been held. That is, a stripped touring car race along the lines advocated by R. H. Smith, of the Premier Motor Car Company, and Edgar Apperson, of the Apperson Brothers Automobile Company. There are to be five events in all, leading off with a 25-mile race for gasoline stock touring cars, followed by a second event at the same distance for gasoline runabouts; then there will be a 10-mile open for stock steamers, followed by a 50-mile open-for-all stripped stock chassis, winding up the program with a 5-mile open for cars constructed prior to 1905. It will be noticed that both the two last-named events are of a novel nature, and the racing committee, consisting of L. R. Speare and F. A. Hinchcliffe, are of the opinion that they will meet with considerable popular favor.

SOUTH AMBOY BRIDGE NOT YET OPEN.

Numerous inquiries are constantly being received at the office of the Automobile Official A. A. A. Blue Book as to the present status of the bridge connecting Perth Amboy with South Amboy, N. J., across the Raritan River. As this provides a direct route to Jersey coast resorts and means a saving of fully thirty miles, most inquirers wish to know if the bridge has been reopened to traffic. This is not the case as yet, and it is doubtful at present whether it will be opened much before September 1. In the meantime all tourists going to north Jersey resorts should take the route via New Brunswick.

TO DO AWAY WITH THE WATER BREAKERS.

WILLIAMSPORT, PA., Aug. 13.—The roads in this part of Pennsylvania are well built on a limestone foundation, but they are distinguished by that most objectionable of all road obstructions, the water breaker, built diagonally across the highway at intervals of about every 200 feet, making running at more than a very slow pace impossible. The Center County Automobile Club is now taking up the matter of starting a movement to improve the roads, and this will be the first object of attention.

TRYING OUT THE ROYAL FOR 1908

CLEVELAND, O., Aug. 12.—Roert Jardine and Archie McLaughlin, of the Royal Motor Car Company, accompanied by J. E. Iams and S. K. Clark, of Iams Bros. & Co., Pittsburg agents for the Royal, left Cleveland last week on a long trying-out trip with the 1908 Royal. The party went to Jamestown, N .Y., and then south into the mountain country of Pennsylvania.

POPE CO. IN RECEIVER'S HANDS.

HARTFORD, CONN., Aug. 14.—The Pope Manufacturing Company, of this city, together with its subsidiary concerns, the Pope Motor Car Company and the Federal Manufacturing Company, to-day were placed by the Chancery Court of New Jersey in the hands of Egbert J. Tamblyn, attorney, as receiver. Albert L. Pope has been appointed receiver in Connecticut and the Northern and Southern Federal districts of New York.

Similar proceedings will at once be taken in every other State in which the company has property. The latter is a New Jersey corporation organized in 1903 to succeed to the properties of the then defunct American Bicycle Company. It owns all the capital stock of the other companies mentioned, amounting to $10,000,000, of which $1,000,000 is common, $2,390,976 first preferred, and $8,633,100 second preferred.

According to the counsel to the receiver, the nominal assets of the Pope Manufacturing Company are $7,500,000, with liabilities of about $1,500,000, while the assets of the Pope Motor Car Company are placed at $3,250,000, with liabilities of but $1,000,000, the total estimate therefore making the combined assets $10,750,000 and the liabilities $2,900,000. The company's balance sheet for July, 1906, showed total assets of $23,717,155, and after deducting liabilities the surplus was only $23,860 as against $23,859 in 1905 and $50,993 in 1904.

Albert Rathbone, of Joline, Larkin & Rathbone, of counsel to the receiver, said to-day:

"The necessity for the present proceeding arises from the curtailment of credit and reduction of loans on notes. In other words, the receivership proceedings are the direct outcome of the present rigid money conditions. Loans were falling due and the company was unable to raise money with which to meet them, so that the placing of the company in the hands of a receiver seemed to be the only alternative that would conserve the rights of the creditors. We have every reason to believe that the assets are worth many times the amount of the liabilities."

The company has factories at Hartford, Conn., Hagerstown, Md., Toledo and Cleveland, O., and Indianapolis, Ind.

The officers are: Albert A. Pope, president; Albert L. Pope, vice-president; C. E. Walker, second vice-president; George Pope, treasurer, and W. C. Walker, secretary. According to the latest list available, the directors are: W. A. Read, Colgate Hoyt, F. S. Smithers, and George F. Crane, of New York; Albert A. Pope, Albert L. Pope, and George Pope, of Hartford, Conn.; Charles Hayden and A. W. Pope, of Boston, Mass., and Paul Wilton, of Ridgewood, N. J.

Pope automobile products have had a varied career from the technical standpoint, and their builders have been unfortunate in that their improvements in the evolution of up-to-date designs have not always met with the approval of the automobiling public. It will be recalled that the Pope-Toledo, made at the western factory in Ohio, proved very popular up to last year, when the design was abolished and something totally new substituted. For one reason or another, the Pope-Tribune, the product of the Hagerstown, Md., plant, has never achieved any great sale, and up to last year the Pope-Hartford was not over-successful, a number of the 1905 models being marketed at a sacrifice at the end of the season. A sweeping revision on the design—in fact, the creation of a totally new car under the name of Pope-Hartford—reversed matters where the Connecticut plant was concerned, and its output has been very successful.

PLANS FOR THE NEW GARFORD CAR.

CLEVELAND, O., Aug. 13.—The Garford Motor Company, the new corporation recently organized to market complete automobiles, will put out a car under its own name the coming season. Albert R. Davis has been appointed secretary and sales manager of the company. The entrance of the Garford people into the field of complete automobiles brings into the industry another very strong concern, destined to become a leader.

ALGONQUIN HILL CLIMB HONORS DISTRIBUTED

CHICAGO, August 12.—Hills that are hills in the prairie States are as scarce as the proverbial hen's teeth, but that the autoists of the Middle West know how to take full advantage of the occasional lonely excrescence that dots the plain is amply evident from the report of the Algonquin hill climb, held under the auspices of the Chicago Motor Club last Friday. What might have proved a mishap of so serious a nature as to have caused the abandonment of the event happened the day before when Phil Kirk, at the wheel of the Apperson racer built for the 1906 Vanderbilt Cup race, smashed into a Maxwell runabout in one of his preliminary trials. With the exception of David Beecroft, who was on the running board of the racer and who received a sprained ankle, bruises were the most serious injuries, though the little car was picked up and thrown into the ditch.

LELAND AND HIS SIX-CYLINDER STEARNS AT THE STARTING POINT.

The climb itself was divided into two sessions, one in the forenoon on Perry Hill, a quarter-mile long elevation which the contestants were required to tackle from a standstill, and the ascent of both Perry and Phillips hills in the afternoon from what was jocularly termed a broad jump, as this was what the flying start was converted into by the presence of a bad water breaker right at the foot of the hill which sent the cars high in the air when they hit it.

Interest throughout the day centered in the performances of the Stearns six-cylinder runabout, driven by F. W. Leland, and the Apperson "Jack Rabbit," handled by Phil Kirk. Last year's mark of :34 for Perry Hill, made by the Pierce Arrow, was cut to :26 1-5 by Leland, and to :28 by Kirk's pink "Jack Rabbit," both of these machines being placed in Class 5, according to the system of handicapping based on the total piston area of the cars, time, and weight of car and driver, the area being multiplied by the combined times up the two hills and divided by the third factor of weight.

The three thousand or more spectators were intensely interested in the actual events, but regarded the method of figuring somewhat in the light of mathematical juggling, while some of the victories were popularly put down to mental arithmetic, though the entrants themselves made no protest. For instance, the 14-horsepower Maxwell in Class 2, driven by W. B. Jameson, made the morning climb in :56 flat, but E. L. Welant's 22-horsepower Buick, which took 1:12, was awarded the victory. Frank Nutt's 50-horsepower Haynes made it in :38; but the palm was awarded to H. Branstetter's 20-horsepower Moon, which required 41 3-5 seconds to complete the distance.

It was a day of general record breaking, and though the road was in no better condition than last year, the distance was about fifty feet less. Late in the day Phil Kirk, in the big "Jack Rabbit," got things down to :27 2-5, and Charles Van Sicklen's smaller car of the same make did it in :32, while the Stearns 30-horsepower, driven by Leland, tied its former record. Not the least novel event of the day was the work of a small fleet of electrics, entered by Carl Metzger, of the Woods Motor Vehicle Company, at the last moment. From a standing start F. J. Newman piloted one of them up in :56 flat, and was followed by Metzger himself in another, which could not do better than 1:05 1-5, while the third was still slower, taking 1:10, though the first bettered the times of no less than twelve of the gasoline machines.

Mathematical victories may be all very well for the sharps, but the man at the roadside wanted real victories that he could see. Consequently interest was centered in the free-for-all. The events of Class 5, which preceded it, showed how evenly matched were the Stearns and the Apperson, the former making it in :33 1-5 and the latter in :33 flat, though, owing to their great piston displacement due to having six cylinders and their light weight by comparison, neither was in the figuring, only getting fifth and ninth.

In the free-for-all actual times up both hills counted. Leland led off, and while making a fast pace lost a tire from his right rear wheel at the last turn, but showed his masterly control of the car by keeping it in hand and finishing in :34. He was followed in by the tire, which, after running 200 yards or more, still had sufficient force left to bowl over a young girl; no damage resulting, however. Then Kirk made an essay at it, and, bounding, swaying and bumping in the Apperson up over the turns and bad spots like a rubber ball out of a gun, succeeded in making it in :33 4-5, which cut down the 1-5 second lead the Stearns gained in the morning.

There was some talk of running off the tie, but Referee Donald refused to sanction it owing to the poor condition of the

PHILIP KIRK IN APPERSON "JACK RABBIT" ROUNDING TURN ON THE HILL.

road. The Stearns contingent had earlier entered a protest to the effect that neither of the Apperson cars was from stock owing to the use of rubber guards on one and the absence of a muffler on the other, but withdrew both. The Berliet was also protested by the Packard backers as not having a regulation body and this was referred to the committee for decision and will be brought up for consideration later.

Honors were very well divided, no car taking more than one event. The 12-horsepower Autocars, driven by F. C. Vaughn and James Levy, ran first and second in Class 1, the event in which they figured favorably last year, while in Class 2 the 22-horsepower Buick, handled by E. L. Welant, made the best time in its class both morning and afternoon. In Class 3 the 24-horsepower Columbia, skillfully handled by P. Bellew, beat its rivals in point of time on both, and its aggregate percentage was considerably the best of the day by quite a margin.

The 30-horsepower Moon, which was entered in Class 4, calling for a piston area of 65 to 90 square inches, ran as a dark horse, the same as it did last year, only being listed at the eleventh hour by H. Branstetter. Likewise he repeated his performance of last year by carrying off the handicap honors in his class as he did in 1906 with the Queen under similar circumstances. It was Frank Nutt's Haynes roadster that made the best time in this class. The 40-horsepower Pierce-Arrow, driven by P. Hoffman, carried off the victory in Class 5, known as the "big bunch," as it called for cars having a piston area of 90 square inches and over. It will be recalled that it was Hoffman who carried off all the honors last year by making the fastest times in the big Pierce. J. W. Norden's 40-horsepower Berliet took a close second in both Class 3 and Class 5.

Summaries of Morning Events on Perry Hill.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.

1. Autocar, 12-h.p.; driver, F. C. Vaughn.....1:03 1-5
2. Autocar, 12-h.p.; driver, James Levy.....1:05 2-5
3. Holsman, 10-h.p.; driver, J. M. Renegar.....1:20

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.

1. Maxwell, 12-14-h.p.; driver, W. B. Jameson.....0:56
2. Buick, 22-h.p.; driver, E. L. Welant.....1:12
3. Reliable Dayton, 12-h.p.; driver, J. S. Blything.....1:35

CLASS 3—PISTON AREA 50-60 SQUARE INCHES.

1. Columbia, 24-h.p.; driver, P. Bellew.....0:43
2. Jackson 0:43 2-5
3. Jackson 0:51

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.

1. Haynes, 50-h.p.; driver, Frank Nutt.....0:38
2. Moon, 20-h.p.; driver, Harry Branstetter.....0:41 3-5
3. Buick, 24-h.p.; driver, A. D. Trumbull.....0:44 3-5

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.

1. Stearns, 45-h.p.; driver, F. W. Leland.....0:32
2. Pierce-Arrow, 40-45-h.p.; driver, Paul Hoffman.....0:35
3. Berliet 0:41 3-5

FREE-FOR-ALL.

1. Stearns, 45-h.p.; driver, F. W. Leland.....0:27 1-5
2. Apperson Jack-Rabbitt, 60-65-h.p.; driver, Phil Kirk.....0:27 2-5
3. Apperson Jack-Rabbitt, 50-h.p.; driver, C. F. VanSicklen0:32
   Woods Electric; driver, F. J. Newman.....0:56

Summaries for Both Morning and Afternoon.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.

1. Autocar, 12-h.p.; driver, James Levy.....1:03
2. Holsman, 10-h.p.; driver, J. M. Renegar.....1:05 2-5
3. Autocar, 12-h.p.; driver, F. C. Vaughn.....1:20

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.

1. Maxwell, 12-14-h.p.; driver, W. B. Jameson.....0:56
2. Buick, 22-h.p.; driver, E. L. Welant.....1:12
3. Reliable Dayton, 12-h.p.; driver, J. S. Blything.....1:35

CLASS 3—PISTON AREA 50-65 SQUARE INCHES...

1. Columbia, 24-h.p.; driver, P. Bellew.....0:43

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.

1. Haynes, 50-h.p.; driver, Frank Nutt.....0:38

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.

1. Stearns, 45-h.p.; driver, F. W. Leland.....0:32
2. Pierce-Arrow, 40-45-h.p.; driver, Paul Hoffman.....0:35
3. Berliet, 40-h.p.; driver, J. W. Norden.....0:41 3-5

CLASS 6—FREE-FOR-ALL.

1. Apperson Jack-Rabbitt, 60-65-h.p.; driver, Phil Kirk.....0:33 4-5
2. Stearns, 45-h.p.; driver, F. W. Leland.....0:34
3. Apperson Jack-Rabbitt, 50-h.p.; driver, C. F. Van Sicklen
   Woods Electric; driver, C. J. Metzger.....0:56
   Woods Electric; driver, S. J. Peterson.....1:05 1-5
   Woods Electric; driver, F. J. Newman.....1:10

Combined Handicap Summaries by Formula.

CLASS 1—PISTON AREA UNDER 35 SQUARE INCHES.
Autocar, 8.63; Autocar, 9.889; Holsman, 14.65.

CLASS 2—PISTON AREA 35-50 SQUARE INCHES.
Buick, 8.11; Maxwell, 10.995; Reliable Dayton, 15.68.

CLASS 3—PISTON AREA 50-65 SQUARE INCHES.
Columbia, 7.14.

CLASS 4—PISTON AREA 65-90 SQUARE INCHES.
Moon, 9.053.

CLASS 5—PISTON AREA OVER 90 SQUARE INCHES.
Pierce-Arrow, 7.02; Berliet, 7.96; Stearns, 10.18.

MILWAUKEE'S SUCCESSFUL HILL CLIMB.

MILWAUKEE, WIS., Aug. 12.—With a large field in all classes, ideal weather conditions, and well-matched contestants in all the events, the first annual hill climb of the Milwaukee Automobile Trade Association proved a huge success. It was held on Sentinel Hill and the work of No. 23 Peerless, driven by August Jonas, who made the climb in :29 3-5, was easily the feature of the day.

There were eight events, the cars being listed according to a price classification in seven of them, while the last was a free-for-all. With the exception of Class 2, open to cars listing at $1,350 and under, for which the Schandein Cup was offered, the other six events in the price class were for cups offered by the association, while the free-for-all was for a trophy donated by the Milwaukee *Sentinel*, which was captured by the Peerless.

With its numerous bad turns and stiff grades, the hill was well calculated to test both the cars and drivers, and a bad twist right at the start accounted for some of the slow times made.

A Ford runabout, entered by the Curtis Automobile Company, was the winner of the first event for small cars, making the climb in :46 2-5, which was cut to :45 2-5 by the same car next event.

A 22-horsepower Buick, entered by Bates-Odenbrett, brought this down to :41 1-5 in Class 3, cars listed at $2,000 and under, and then it suffered a great drop to :35 2-5 after the attack of the 35-40-horsepower Rambler, driven by A. W. Shattuck, who was the winner in Class 4, $3,000 and under. This car made the best time of the day for touring cars with four passengers up. In Class 5 Shattuck bettered his own record by two seconds, making the lowest figures up to that time—:33 2-5.

The 30-horsepower four-cylinder Jackson came very close to the record in the free-for-all, making the climb in :30 4-5, the next best time of :32 1-5 being made by a Wayne of the Solliday Motor Car Company, with Shattuck's Rambler next in :32 2-5. The two-cylinder cars distinguished themselves, the Buick being the only one of this class to win a cup, and the Jackson, which made a mark of :35 2-5 in the free-for-all, taking the difficult rise on the high gear.

CHICAGO'S MUCHLY MUDDLED 24-HOUR RACE.

CHICAGO, August 12.—The muchly muddled scoring of the 24-hour race at the Harlem track, July 12 and 13, makes it a certainty that the Racing Board of the A. A. A. will have a task in trying to figure out a winner. Perhaps this will be an impossibility, though it would appear that C. A. Coey, the announced winner, will be shorn of his supposed laurels. Affidavits of C. H. Barnes and E. E. Esch, two of the scorers, tell of alleged irregularities on the part of the chief scorer, L. H. Jackman. A charitable conclusion of the whole affair shows that the scoring was badly done, though there is no absolute proof of an understanding to make Coey the winner. The impression prevails that the Chicago Automobile Club will not permit another meet to be held, apparently under its auspices, without giving the most careful attention to the official list, and especially to those entrusted with the scoring of any long-distance event. The United States Automobile Racing Association contents itself with saying, through W. H. Pickens, that the club was to have supplied the officials, and the best possible was done when the club failed to attend to this part of the meet.

CAST ALUMINUM FOR AUTOMOBILE WORK*

By THOS. J. FAY, E. E.

TIME was when aluminum appeared as the most useful of all the cast metals from the point of view of the automobile, but time has cast its shadow on this wonderously light product, and it stands to-day stripped of every qualification save the two redeeming features, viz.:

(a) It may be cast into intricate shapes.

(b) It is of low specific gravity, hence it is of light weight.

As the tests—see records Nos. XI to XV inclusive—will show, none of the cast aluminum products are strong, while the best of them are difficult to cast. Of the large number of castings in the shape of motor and transmission cases used from time to time under the direction of the author, the major portion possessed a low strength and in no single instance is it believed the tensile strength of any casting good enough to use exceeded 20,000 pounds per square inch at the outside, whereas, the best castings—castings free from imperfections—probably did not possess a tensile strength exceeding one-half of this value.

TABLE I.—PHYSICAL PROPERTIES OF ALUMINUM.
Tests of Unmachined Castings.
Tests on Aluminum Bars for National Car Wheel Company.
Averages.

Alloy	Size	Tensile Strength per sq. in.	Elastic Limit per sq. in.	*Per Cent. Elongation	Tensile Strength per sq. in.	Elastic Limit per sq. in.	Per Cent. Elongation
No. 1	1-2 in. sq.	16960	8000	2 1-2			
	1-2 in. rd.	16240	6700	1 7-8			
	3-8 in. sq.	18130	6720	2 1-8	17066	6480	1 15-16
	3-8 in. rd.	17780	7480	1 1-4			
	1-4 in. sq.	16480	5000	2			
	1-4 in. rd.	16810	5000	1 7-8			
No. 3	1-2 in. sq.	15880	9700	1			
	1-2 in. rd.	17820	9180	7-8			
	3-8 in. sq.	17770	8830	1	17462	8890	13-16
	3-8 in. rd.	16995	8200	3-4			
	1-4 in. sq.	18320	9430	3-4			
	1-4 in. rd.	17990	8000	1-2			
No. 5	1-2 in. sq.	15625	7420	1 1-2			
	1-2 in. rd.	16950	7750	1 7-8			
	3-8 in. sq.	16150	7330	1 5-8			
	3-8 in. rd.	17350	7170	1 1-2	17146	7340	1 5-8
	1-4 in. sq.	17480	7120	1 1-4			
	1-4 in. rd.	19320	7250	2			

*Elongation in inches. Yield point not well-defined.

(Signed) ALLEN S. CROCKER, M. E.,
Rochester Athenæum and Mechanics' Institute.

Rochester, N. Y., Feb. 7, 1905.

It is far from the purpose here to decry the use of aluminum for motor and transmission cases, for, in spite of the low average strength of the product, it does serve the purpose very well indeed, but the truth about it is that is all it can lay claim to. In the early days, when aluminum was a "boomed metal," it was used for diverse purposes as brakedrums, and, in fact, to the exclusion of the heavier and far stronger products as steel castings, steel-bronze and die-forgings of steel. Failures in service were the harvest, and a little investigation disclosed a discrepancy as between the promises and the facts so great as to be astounding. Some of these tests of promised strength emanated from sources that were regarded as authoritative, and it is not easy to understand how this false idea could have been engendered.

With a view to affording an adequate volume of data to substantiate the position the author takes in the matter, the Table I is offered in addition to the test records above referred to, and there is much other evidence to be had at every hand.

If, then, it is true that aluminum, in spite of its low strength, is a desirable metal to employ for certain specific places in automobiles, it will be well to know how to get the most out of it by way of strength without sacrificing lightness to an extent likely to render steel-bronze a better selection.

Aluminum is of increasing strength for decreasing thickness of walls, measuring this strength in pounds per square inch. It follows, then, that thin walls should be aimed at from the strength point of view, but there is a limit to the extent that this phenomenon can be taken advantage of. The limit referred to is the foundry limit of thickness that can be cast if it is taken for granted that thin walls will not contribute unduly to the noise in operation. Undoubtedly thin walls tend to noisiness and for a perfectly quiet motor thickened walls of the motor case would contribute a quota.

The foundry limit for thin walls is about 3-16 inch, and this is a wall thin enough to have some effect upon the amount of noise likely to be experienced. At all events, many motor cases are now in service with walls as thin as 3-16 inch, and as a rule properly designed cases with walls of this thickness turn out good sound castings, although if this matter were left to the foundry the walls would be 1-4 inch or even 5-16 inch thick. Besides having the walls thin to attain the maximum unit strength and lightness dictated by the use of aluminum, the radius should be great and all inequalities of section should be avoided. Sweeping curves, plain patterns free from "draw backs" and, in so far as it is possible to do so, the avoidance of cores, loose pieces and other complex pattern work would augur success.

The specific gravity of aluminum for castings is about 3.00—see test record XI—hence the weight of one cubic inch of this product would be:

$$W = \frac{62.425}{1728 \times 3.0} = 0.1c836 \text{ pounds,}$$

whereas steel-bronze has a weight per cubic inch of about 0.2991 pounds. It therefore follows that:

$$\text{Ratio} = \frac{0.291}{0.108} = 2.7, \text{ nearly.}$$

If, then, steel-bronze cases were to be cast one-tenth of an inch thick and aluminum was cast 0.27 inches thick, the weight would

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	NONE
V.		W.	
Mn.	0.84	Si.	0.17
Al.	8.69	Cu.	7.82
S.		P.	
Sn.		Zn.	3.60
Pb.		Sb.	
As.		Fe.	0.79
PHYSICAL PROPERTIES			
T.S.	LBS. PER SQUARE INCH		9390
E.L.			9390
EX. CO.	PER CENT.		0.15
PROOF	DIAM."		1"X1"
	LENGTH"		6"
FRACTURE			OPEN
RATING	U.		
	H.		
TREATMENT			

SUBJECT: CAST ALUMINUM
NUMBER: X1 MARK: BLUM'M NICKEL

NEW YORK 4-17-07 19

THIS PRODUCT WAS SAID TO BE A WONDERFUL NICKEL ALUMINUM COMPOSITION. THE ENTIRE ABSENCE OF NICKEL AND ITS LOW STRENGTH WAS THE FINDING.
IRON IS TOO HIGH
COPPER IS TOO HIGH
ZINC IS TOO LOW

*Extract from "Part III," "Materials for Automobile Construction," by Thomas J. Fay, E.E. Published by the Class Journal Publishing Co., New York.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.	2.48	Si.	
Al.	91.24	Cu.	5.44
S.		P.	
Sn.		Zn.	None
Pb.		Sb.	
As.		Fe.	0.40
PHYSICAL PROPERTIES			
T.S. / E.L.	LBS. PER SQUARE INCH		9,740 / 9,740
EX. / CO.	CENT.		0.14
PROOF	DIAM. "		0.75
	LENGTH "		8.00
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: Cast Aluminum
NUMBER: XII MARK: Spec'l
NEW YORK, 4-17-07 19

This "Special" Aluminum was represented to be quite superior. Iron is an impurity and tends to reduce strength. An aluminum-zinc-copper alloy seems to serve the purpose far better. Zinc can be used even up to 15%. But the castings are then of a rough appearance.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.	None	Si.	
Al.	86.79	Cu.	4.50
S.		P.	
Sn.	0.74	Zn.	7.22
Pb.		Sb.	
As.		Fe.	0.59
PHYSICAL PROPERTIES			
T.S. / E.L.	LBS. PER SQUARE INCH		22900 / 22900
EX. / CO.	PER CENT.		nil. / nil.
PROOF	DIAM "		0.353
	LENGTH "		2.00
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: Cast Aluminum
NUMBER: XIV MARK: McAdmite
NEW YORK, 4-17-07 19

The product tests much better than the average mixture but it does not seem to dominate the market. Even so there is quite some question about making castings with the aluminum mixtures showing over much strength.

The strength of aluminum changes with the thickness of the casting about as follows.

Thickness in inches.

0.10 0.20 0.30 0.40 0.50
1.00 0.95 0.90 0.86 0.827

be the same for both, but the strength would not be the same, for the relative strength values are not the same as the relative weight values. If aluminum is accredited with a tensile strength of 10,000 pounds per square inch, and that is about all to be figured upon with safety, steel-bronze will be seven times as strong on an equally safe basis of figuring. Cupons cut from cases, then, would show up relatively as follows:

Steel-bronze 1" × 0.1 × 70,000 = 7,000 pounds
Aluminum 1" × 0.27 × 10,000 = 2,700 pounds

And $\frac{7,000}{2,700} = 2.6$, nearly = strength of bronze over aluminum for equal weight.

These deductions come very near to showing what can be done if the question of noise does not enter into the calculation. The steel-bronze 0.10 inch thickness of walls, while thin, to be sure, can be cast quite as readily as the aluminum 0.27 inch thickness of walls, whereas, from the cost point of view, the steel-bronze would cost about one-half as much as the aluminum. To sum up, then, it might be said:

(a) Steel-bronze would offer 2.6 times greater strength for equal weight under the conditions set down.

(b) Steel-bronze would cost one-half as much as aluminum under the same conditions.

This way of looking at it puts aluminum in a rather unfavorable light, because many aluminum castings are made less than 0.27 inch thick, and they seem to hold out against breakages, but the thinner castings would fall off in strength, so that what is gained in one way is lost in another; hence, it may be said that the sparing use of steel-bronze affords a measure of strength for a weight possible to tolerate that renders the steel-bronze a good competitor of the aluminum.

In practice, while aluminum is used very extensively for the purposes in question, steel-bronze is used but very little; indeed, the Locomobile is about the only notable instance of persistently holding to steel-bronze for motor cases in the past. The makers put steel-bronze in the motor case of the B. L. & M. racing car for 1906 and found it quite desirable in many ways. This happened after repeated failures to procure good aluminum castings because the walls were very thin and the shape was irregular. This instance proved that steel-bronze castings could be made thin, whereas aluminum did not so readily lend itself to this end.

The author, in his capacity as consulting engineer, examined a broken aluminum motor-case of a well-known foreign car but recently, and while the walls were quite thick and the motor arms were very deep and massive, about 8 mm. thickness, the case failed in service and an examination of the casting disclosed alarming conditions. As a matter of fact, a few light taps with a hammer caused the arms to fly into pieces, and, no matter what part of the case was so treated, the same brittle tendencies were manifested. This motor-case was not designed for lightness at all, nor would it have been difficult to make a case for this motor of steel-bronze and have it much lighter, whereas, from the strength point of view, *steel-bronze would have been vastly superior.*

Aluminum is a product very easy to render brittle in the process of casting, as, for illustration, a little overheating will do the trick, or the use of scrap aluminum is enough to render the castings unfit for automobile work. Iron—as an impurity—has a decidedly weakening tendency, even though the increment present be but slight. The alloys of aluminum, zinc and copper seem to afford the best static strength results and the zinc can be as high as 15 per cent. This element tends to rough-looking castings as well as brittleness, and may render the castings a little unruly, but the tests available show a decided increase in strength over other products thus far examined.

The specific gravity of aluminum itself is 2.6 to 2.7, hence the alloys are considerably heavier, since some of them have a specific gravity of 3.00 and even slightly more. The melting point of aluminum is 1,160° F. $= \frac{(1,160-32)\times 5}{9} = 626.6°$ Centigrade; hence, aluminum is a metal with a low melting point and it also "burns" easily; moreover, it will not stand "soaking."

Aluminum, while it dissolves in alkaloids and in hydrochloric acid readily, is not seriously affected by sea water, as some are wont to claim, and it is not therefore debarred from use for

motor and transmission cases in motor-boat work. The author has been able to experiment upon this phase of the question at considerable length and has had to do with aluminum cases in such motor boats as *Simplex III, Challenger, Dixie, Vingt et un II, Simplex I, Simplex II* and other products. Even at the end of three or four seasons the aluminum cases were found to be in thoroughly good condition.

Aluminum is highly electro-positive, and if it is permitted to form a couple with some other metal, submerged in sea water, the electrolysis will be very serious, and it is more likely than not this fact gave vent to the opinion that aluminum may not serve in motor-boat work. On the other hand, aluminum in motor and transmission cases is protected by the oil both in and outside and on this account sea water does not act upon it.

In carbureters this metal was widely employed some three years ago (1904), but it was soon found that in contact with liquid hydro-carbons a jelly-like consistency was formed that stopped up the openings and caused much trouble. It is not now considered desirable to employ aluminum for carbureter floats, and the author has abandoned its use for any part of carbureters, preferring phosphor or arsenic bronze.

Aluminum castings are made in both green and dry sand moulds, but the shrinkage is more irregular, making it always something of a problem to fix upon the shrink allowance for patterns. The exact shrinkage depends upon the alloying elements and the percentages of the components in the mixture. In general it is said an allowance of one-tenth of an inch to the foot will suffice. The best way, perhaps, will be to measure the like sizes of castings and allow accordingly, for in all truth there are several factors likely to influence the results.

In castings this product is prone to warp and cool, hence finish faces should be provided with a good thickness of "finish" metal, else castings are likely not to "clean up."

Much of the early talk about the extraordinary qualities of aluminum were no doubt due to the strength developed in aluminum-bronze, which product holds from 90 to 97 1-2 per cent. copper and the remaining content is aluminum, barring some slight impurities. Aluminum-bronze, then, is a high copper alloy and has a high specific gravity to match; hence, all the lightness of aluminum castings as used for automobile work is conspicuous for its absence.

Aluminum has many valuable uses, besides, in castings for automobile parts, as for electrical conductors, aluminum-bronze parts, as before stated, and steel-aluminum for many purposes, as body facings, etc. In the manufacture of steel, aluminum plays an important part, in that small doses of it, when added to the "teeming mass," prevents the included gases from remaining in the steel, hence the ingots are made more solid and perfect. It has been found that as little as from 2 to 8 ounces of aluminum to the ton, added in the ladle, renders steel ingots far more smooth and perfect than the ingots would be in the absence of such a slight amount of this material.

Cast aluminum bodies are at present quite prevalent, and they have numerous possible advantages, among which, however, low cost may not be found. The future bodies for automobiles can scarcely be in the direction of aluminum for two reasons, at least, viz.:

(a) Aluminum is non-dynamic in the extreme.

(b) The aluminum supply does not equal the requirement, bodies not considered.

While bodies do not require dynamic properties in the materials used to any noticeable extent, yet, even so, no one would suggest using glass for body work. True, cast aluminum is far less brittle than glass, but it is far more brittle than sheet aluminum and the weight of cast aluminum in body work is something that has to be taken into account.

There are diverse ways of making light, strong bodies without casting them in aluminum, and most makers seem to prefer to resort to the other methods. Of course, cast aluminum bodies are far better than some wood bodies with open joints stuffed full of putty, and for that matter cast bodies are not as heavy as aluminum bodies with plaster of Paris as a backing or with large aggregations of wood for framing and elsewhere. At all events, if cast aluminum bodies are lighter than some makes of bodies not employing cast aluminum, it is because the other bodies are not properly made.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.		Si.	
Al.	81-42	Cu.	2.48
S.		P.	
Sn.		Zn.	16.10
Pb.		Sb.	
As.			
PHYSICAL PROPERTIES			
T.S. / E.L.	LBS. PER SQUARE INCH		25800
EX. CO.	PER CENT.		2 X 1.
PROOF	DIAM."		
	LENGTH"		
FRACTURE			
RATING	U.		
	H.		
TREATMENT			

SUBJECT: ALUMINUM CASTING

NUMBER: XV MARK: No 8 A.

FROM: LIGHT MFG. & FOUNDRY Co.

NEW YORK, 4-17-07 19

VARIOUS THICKNESSES OF THIS PRODUCT TESTED AS FOLLOWS

THICKNESS	T.S.
0.10"	27,200
0.20"	25,800
0.30	24,600
0.40	23,600
0.50	22,500

THE SPECIFIC GRAVITY OF THIS PRODUCT WAS FOR A 1" SQUARE 2964 FOR VARIOUS OTHER THICKNESSES IT WAS:

THICKNESS	SPEC. GR.
1-8"	3.007
1-4"	3.007
3-8"	3.024
1-2"	3.012
9-16"	3.004
5-8"	3.002
3-4"	3.004

REPORT OF — MECH. BRANCH A.L.A.M. APR. 6.-1906. TEST OF ALUMINUM.

CHEMICAL COMPOSITION			
CARBON	TOTAL		
	COMBINED		
	GRAPHITE		
	FERRITE		
	PEARLITE		
	CEMENTITE		
Cr.		Ni.	
V.		W.	
Mn.	0.012	Si.	
Al.	0.51	Cu.	56.23
S.		P.	
Sn.	0.68	Zn.	41.16
Pb.	0.019	Sb.	
As.		Fe.	1.41.
PHYSICAL PROPERTIES			
T.S. / E.L.	LBS. PER SQUARE INCH		71429 / 38197
EX. CO.	PER CENT.		24.5 / 24.8
PROOF	DIAM."		1.00
	LENGTH"		2.00
FRACTURE			
RATING	U.		
	H.		
TREATMENT			CASTING

SUBJECT: STEEL BRONZE

NUMBER: XIX MARK: PHR-BRNS

FROM: WILLIAM CRAMP & SON-S. B. & E. Co.

NEW YORK, 4-17-07 19

TEST OF THE KRUPP "V" STEEL. BRONZE SHOW ABOUT THE SAME QUALITIES.

HOW FAR SKIDDING IS DUE TO ROAD SURFACES*

By DOUGLAS MACKENZIE, M.I.A.E., A.M.I., Mech.E.

THE construction of roads from the point of view of the skidding to which self-propelled vehicles would be liable necessitates some study of the phenomena of skidding. Under normal conditions the wheels of the vehicle are supposed to roll over the road surface, the actual point or line of the perphery in contact with the road being quite stationary. Under such conditions the smoother the tire, and the smoother the road, the less would be the resistance to rolling action. This would be perfectly true if there were no forces acting on the wheels, but in point of fact there are numerous forces, and these are the cause of all the troubles in actual practice. With a wheel that is not driving the vehicle, there is the friction at the hub, which tends to prevent it rolling freely. The driving wheel, on the other hand, has forces exactly opposite trying to force the wheel round faster than the actual rolling, but immediately the driving ceases, and the brakes are applied, exactly the reverse forces are acting. Again, the steering wheels have to resist the tendency of the vehicle to travel in a straight line, and there is a force tending to push these wheels sideways when they are turned through an angle. Lastly, there is the force of gravity, which is of no moment, so long as it is at right angles to the road surface, but is very important when the road surface is inclined. The existence of this force renders it necessary to obtain considerable adhesion between the tire of the wheel and the surface of the road, so that there shall be very great frictional resistance to any rubbing of the tire over the road surface as opposed to free rolling. This adhesion must not be obtained by any stickiness, which would prevent the tire from rising freely from the road as the wheel rolls forward; it must be purely friction between the actual surfaces of contact. The pneumatic tire introduces some further problems, but it is not necessary to consider them separately, but from the foregoing observations it is clear that a finely roughed surface is necessary to produce the required friction. Therefore, the primary necessity in selecting a material for a non-skidding road is to have a compound surface composed of two or more substances, differing in the degree of hardness, but these materials must be so finely divided that the road is sufficiently smooth for perfectly free rolling. The coefficient of friction on such compound surfaces is very high, amounting to as much as .8, but a further consideration of equal importance is that none of the substances of which the surface is composed should be able to form grease or lubricating substance under attrition of traffic.

Granite Road Surface and Its Advantages.

Granite is an ideal substance for this purpose, because it is composed of crystals of different materials differing in their degree of hardness, but it is impracticable to make roads of granite perfectly monolithic—that is to say, in complete slabs—the full width of the road. In order to make it practicable to construct a granite road, the material has to be divided into blocks of a sufficient size for convenient handling.

The most perfect granite surfaces are to be seen in Hamburg, where large setts are used, cut with extreme accuracy, so that the surface is perfectly flat, and the joints are so small as to be practically indistinguishable. This is quite a different class of road to the granite-sett roads in our English towns, where the surfaces of the individual setts are very much rounded, and the tires of wheeled vehicles, instead of rolling smoothly, have to bounce from sett to sett. Granite roads made with perfect setts are almost noiseless, the only sound being due to the hammer of horses' shoes, and as this antiquated form of haulage is steadily reduced, the noise will be inappreciable.

An approximation to this form of granite surface—very much cheaper—is that employed on many of the German country roads, and which is known there as "Kleinpfläster." It is introduced into this country under the title of "Cubette Paving" or "Durax Paving," and is composed of small setts laid at random, and broken by special machines to about 4½-inch cubes. As the joints are none of them square to the direction of motion, the wheel is always riding on two or more of them, and does not jump from sett to sett. Consequently the wear on these setts tends to smoothen the road instead of roughening it as with common town setts.

Materials Suitable for Treating Granite Surfaces.

Next to the first-class quality setts employed in Hamburg, the best surfaces are obtained by breaking granite to about 1½-inch cubes, and binding it by means of an elastic matrix. It is, however, necessary to remember that the interspaces between the pieces of broken granite should be very small, and therefore the 1½-inch granite should be mixed with some ½-inch, some ⅜-inch and some granite dust, so that the quantity of matrix required is very small, and the joints between the pieces of granite in the road surface will never be more than ⅛ inch under the most adverse circumstances. There seems to be a great difficulty in getting tar to adhere to granite, and so the tar has to be treated by distillation, and also by the addition of various substances so as to considerably alter its nature. There are half-a-dozen such materials now on the market, and they will not only adhere to granite, but they are unaffected by English temperatures and do not become soft in summer and brittle in winter, as is the case with untreated tar. These materials give an exceedingly good surface from the non-skidding point of view, because not only do you have the advantage of the compound nature of the granite, but you have the addition of another substance of a different degree of hardness in a sufficiently fine state of subdivision to give you the ideal roughened surface. It is also practical with such a matrix to use limestone in a state of fine subdivision where limestone is much more easily obtained than granite, but this is not quite such a suitable substance, as finely-ground limestone has certain lubricating properties; and therefore the mud arising from this surface in wet weather makes a nasty, slippery grease.

Great objection is raised by some councils to the cost of improved roads made on this system, especially for country roads, but it must be remembered that a great deal of the deterioration of country roads is due to the effect of weather instead of traffic, and if a thoroughly waterproof road is constructed in the first instance it is absolutely weatherproof, and therefore does not deteriorate from any other cause than the attrition of passing traffic.

Proper Camber of Road Surfaces Very Important.

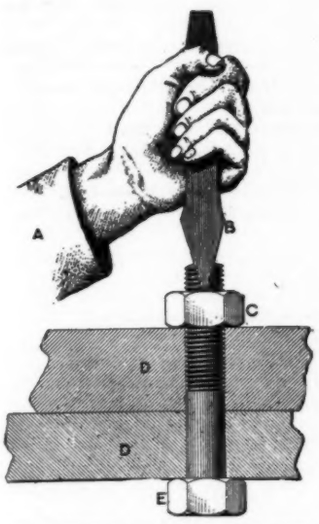
I have already mentioned that one source of skidding is due to the action of gravity when the surfaces are inclined, and with a properly waterproof surface the water will run off with much less camber than the old-fashioned roads. Probably a camber of 1 in 50 will be quite sufficient for these roads, and therefore the skidding due to the pull of gravity towards the gutter need not be at all a serious matter. The mistake has been made in some parts of the country of adopting waterproof roads with the same road contour as that previously in use, but one of the great advantages of modern materials is the reduction of the camber which they will permit.

*Read before Royal Automobile Club of Great Britain and Ireland.

To make a cement for cast iron take 16 ounces cast-iron borings, 2 ounces sal ammoniac and 1 ounce of sulphur; mix well and keep dry. When ready to use take one part of this powder to 20 parts of cast-iron borings and mix thoroughly into a stiff paste, adding a little water.

PRACTICAL HINTS FOR THE AUTO OWNER

AFTER a certain length of service, the cylinders of an automobile have a tendency to ovalize, says *Omnia,* owing to the movement of the pistons causing pressure on two opposite points. Naturally the piston rings ovalize at the same time. If, after taking down the cylinders, the rings are put back in exactly the same position, no inconvenience will be felt from this uneven wear, for the cylinders will not be losing compression. Some conscientious constructors use a stud which prevents the piston rings turning. It is an excellent precaution. But this does not prevent the piston rings being transposed. As the ovalization of a cylinder by usage is far from being symmetrical, care should be taken to mount the rings in the same groove and in the same position as before. Neglect to do this is frequently a cause of loss of power.



TO REMOVE AN OBSTINATE NUT.

What to Do When a Nut Cannot Be Moved.

Sometimes a nut is so solidly rusted to a bolt that it is impossible to move it by ordinary means. To force it with a wrench would only result in breaking the bolt and causing a large amount of extra work. The only thing to be done is to sacrifice the nut by splitting it with a chisel, as shown in illustration.

Two Views on the Possibilities of Cast-iron Valves.

Whenever it has been attempted to replace steel for cast iron in cylinders, piston rings, etc., it has been found that the steel wore out much more rapidly than cast iron. Of all metals cast iron is the one which best resists the action of heat. Steel and bronze, used in cannon or on gas and steam engines, will not resist the erosive action of gases passing at high speed; cast iron, on the other hand, is never subject to erosion, unless chemical agents are present. The use of cast iron for cylinders and valves is to be recommended. Care, however, should be taken in its selection in view of the work it has to perform. Experience has shown that on automobile motors steel valves deteriorate quickly, while cast iron seatings resist and give good service.

Another view on the subject by a French constructor writing to the same journal is that cast iron valves rarely corrode or become pitted, only need grinding at long intervals, and are exceedingly gas tight. The reason why they are not generally employed on automobiles is owing to the difficulty of attaching them to the valve stem. On slow speed stationary engines they give satisfactory results, but will not hold together on high speed automobile engines. In addition, cast iron valves are heavier and thicker than steel ones, thus reducing the power of the engine to such an extent that there is little possibility of their use extending beyond the domain of stationary engines.

Where the Chauffeur-Mechanic Can Best Attend to Business.

Placing the chauffeur on a small seat hanging over the left running board, with his feet on the latter, is becoming more and more common among European automobilists who drive their own cars and object to placing the mechanic in the tonneau whenever a friend is carried on the left front seat. Certainly it would be impossible to find a position in which the mechanic is more conveniently placed for attending to the motor than on a spider over the running board. A simplification of the European mechanic's seat was noticed on a large Italian car in a New York garage recently. Hinged outwards from the left hand side of the car was a simple padded seat supported by a couple of metal legs to the running board. When not in use the seat folded inwards under the feet of the left front passenger. To secure the mechanic from being thrown out, a broad strap could be clipped onto the dashboard and a handle on the side of the car body. When not used the ordinary lines of the car were in no way changed.

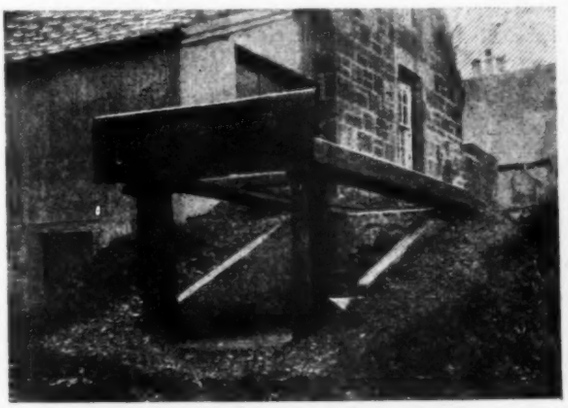
How One Owner Found a Substitute for a Bolt.

A novel makeshift repair when a 10-12-horsepower two-cylinder car shed the bolt holding the universal joint between gear box and cardan shaft is described by a writer in *Autocar.* The owner found that he had no bolt near the size, and it was some miles to the nearest town where one could be obtained. After a little thought, he found a way out of the difficulty in the following manner: The sprag wire was cut, then threaded three times through the bolt hole, the ends afterwards being splayed and bound up securely with copper wire. With careful driving he was enabled to complete his journey.

Automobile Pits Within the Reach of the Amateur.

Constructing the ordinary type of dugout automobile pit is an undertaking that the average autoist hesitates to tackle. One substitute occasionally seen on private garages consists of a couple of parallel rails, mounted on stout supports, about four and a half feet from the ground, and of sufficient length to suit the wheelbase of the car. By as gentle a gradient as space renders possible, one extremity of the platform is connected to the ground by stout rails. A winch fixed up at the opposite end of the platform allows a car to be drawn up with ease, and, a ratchet being fitted, to be held at all points in perfect safety.

Another type of substitute pit easily constructed by the amateur is described by an English writer in *Autocar.* "It is constructed, as may be seen by the accompanying photographs, as a sort of pier off the hillside on which our stables stand, and


AN EASILY CONSTRUCTED AUTOMOBILE PIT.

will take any size of car. It could be easily protected by a light roof if desired, and when so covered in it would be very light to work in, even in dull weather. The following are the dimensions which I have used and have found satisfactory for three years: Length of rails, 12 feet; width of rails, 11 inches between inside of raised edges; thickness, 4 inches; track, inside measurement 3 feet 2 1-2 inches, outside 5 feet 4 inches; height of track at outer end of rails, 4 feet 4 inches above pit floor; pit,

width 4 feet 5 inches, length 9 feet, including step; step is 1 foot 8 inches high and 2 feet 4 inches from back to front. The supporting uprights at the outer end of the track are 10 inches in diameter; both rails and uprights are of pitch pine, painted. The buffer at the end is shown covered with sheet zinc to protect it from the wet; the zinc covers for the rails have been removed. The lean-to shown is the motor house adjoining the stables. A cinder path round the pit allows of free movement of cars. Both the pit and the step are floored with paving stones, and sloped slightly towards the front towards a drain provided to carry off the water."

Current Leakages Through Insulation.

When overhauling a single-cylinder machine a short time ago, to determine the cause of the engine not firing—although the trembler, which had been giving trouble, was buzzing merrily—we accidentally moved the high-tension cable slightly when a double buzz was heard, says *Autocar*. One was the metallic buzz of the trembler, while the other was a sharp, short spitting, clearly indicating that a fault in the cable insulation was allowing the high-tension current to short to earth, the flaw being found close up to the engine. As no spare wire was carried, the cable was taken down and reversed, that is to say, the coil end was connected to the plug, while the end that was originally joined up to the plug was connected to the coil. This arrangement brought the fault in the cable to such a position that it hung quite clear of the engine, and, consequently, being unable to short to anywhere, the current resumed its correct path through the plug. The difficulty of tracing this derangement is due to the fact that when trying to start the engine the jolting moved the high-tension cable so that a short could occur, which short was for the same reason inaudible. When, however, the contact maker was put on contact, and the switch put on, the two buzzes were immediately heard, but not till after the accidental moving of the high-tension cable, which brought the short circuit into operation, and the dismantling of the carbureter to clear a possible stoppage of the jet. The time on the latter job, however, was well repaid by the improved running of the machine, as both the float and jet chambers were found in need of attention.

Slow Working of Tremblers May Cause Misfiring.

Some tests which have recently been made with induction coils show that misfiring at high speeds is due to the slow action of the trembler blades, and not to faulty carburation. Only the best rapid action coils should be used to get the most satisfactory results from an engine.

When a coil trembler persists in sticking, the trouble will often be found in the small helical *vertical* spring which keeps the trembler blade up against the platinum-tipped screw—that is, of course, if the coil is fitted with a trembler of the pattern. If the trembler screw is readjusted and this spring slightly elongated, it will be found to give a more vigorous action to the trembler.

STORAGE AS A SAFETY OF ALCOHOL.

Alcohol as a fuel has certain advantages over gasoline in the matter of storage, says *The Iron Age*. If a can of gasoline be left open near a flame, it is likely to explode by the ignition of its vapor. This could never occur with alcohol. Then, again, water is useless to quench burning gasoline, serving only to spread the fire by floating the burning liquid. Alcohol can never present this danger, for it mixes with water in all proportions, and in so doing becomes non-inflammable. In the use of the fuel in submarine boats, or other hazardous places, the superior safety of alcohol must lead to its ultimate adoption. Its advantages in this respect in such unusually hazardous places must also fit it for an automobile fuel without equal; that the risk of fire and explosion on the car is no small item can readily be appreciated by a review of the number of such vehicles that have been destroyed in this manner during the past few years.

THE AUTOMOBILE CALENDAR.

AMERICAN.

Shows and Meetings.

Oct. 24-31.....—New York City, Grand Central Palace, Eighth Annual Automobile Show, Automobile Club of America and the American Motor Car Manufacturers' Association.
Oct. 31-Nov. 7..—New York City, Madison Square Garden, Eighth Annual Automobile Show, Association of Licensed Automobile Manufacturers.
Nov. 29-Dec. 6..—Chicago, Casino Garden, Second Annual Auto Parts Show. A. M. Andrews, Secretary, 184 La Salle Street.
Nov. 30-Dec. 7..—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association.
Dec. 28-Jan. 4..—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, secretary and manager.
April 6-11.....—Buffalo, Convention Hall, Motor Boat and Sportsman's Show. D. H. Lewis, manager.
Sept. 7.....—Minneapolis, Minn., State Fair Race Meet of the Minnesota State Automobile Association.

Races, Hill-Climbs, Etc.

Aug. 17.....—Newark, N. J., Olympic Park, Carnival of the New Jersey Automobile and Motor Club.
Aug. 31.....—Philadelphia, Race Meet under auspices of the Quaker City Motor Club. (Track will be either Point Breeze or Belmont.)
Sept. 2.....—Harrisburg, Pa., Race Meet of Motor Club of Harrisburg (probably Middletown track).
Sept. 2.....—Chicago, Harlem Track, Race Meet under the auspices of the Chicago Automobile Club.
Sept. 2.....—Bridgeport, Conn., Labor Day Hill Climb, Sport Hill, Bridgeport Automobile Club.
Sept. 5.....—Chicago, Cedar Lake Economy Run, Chicago Motor Club and Chicago Automobile Trade Ass'n.
Sept. 7.....—Hartford, Conn., Hill Climb, under the auspices of the Automobile Club of Hartford.
Sept. 14.....—Jamestown (Va.) Exposition, Aeroplane Contest for "Scientific American" Prize.
Sept. 14.....—Albany, N. Y., 95-mile Road Race, under the auspices of the Albany Automobile Club.
Sept. 20.....—Milwaukee, Wis., State Fair Grounds Track, Race Meet, Milwaukee Automobile Club and Milwaukee Dealers' Association.
Oct. 21.....—St. Louis, Mo., International Aerial Race of the Gordon Bennett Prize, Aero Club of America.

Motor Boat Races.

Aug. 22.....—New York to Jamestown (Va.), Annual Cruise, American Power Boat Association.
Sept. 2-6.....—Jamestown (Va.) Exposition Motor Boat Races.

FOREIGN.

Shows.

Aug. 1-Sept. 30..—Holland, Amsterdam, International Exhibition of Motors and Machines, Palace of Industry.
Sept. 28-Oct. 7..—Denmark, Copenhagen International Automobile Show.
Nov. 11-23.....—London, Olympia Motor Show.
Nov. 12-Dec. 1..—Paris, Exposition Decenniale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
Jan. 18-Feb. 2..—Turin, Italy, Fifth International Automobile Exposition. Palace of Fine Arts, Valentino Park, Automobile Club of Turin.

Races, Hill-Climbs, Etc.

Aug. 23.....—Belgium, Ostend Motor Boat Meeting.
Aug. 11-29.....—France, Coupe de Auvergne.
Sept. 1-2.....—Italy, Brescia Circuit, Florio Cup. A. C. of Italy.
Sept. 15.....—Austria, Semmering Hill Climb, Austrian Automobile Club.
Sept. 15.....—France, Chateau-Thierry Hill Climb.
Oct. 1-15.....—Paris, Electric Vehicle Competition, Automobile Club of France.
Oct. 20.....—France, Gaillon Hill Climb.
Nov. 1-15.....—France, Voiturette Contest near Paris.
May 16, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
July 14, 1908....—Paris to London, Aerial Race.

LETTERS INTERESTING AND INSTRUCTIVE

DATA WANTED FOR AN AIRSHIP ENGINE.

Editor THE AUTOMOBILE:

[853.]—I have read a graet deal of valuable information concerning automobile engines in "The Automobile," and wish to know if you can give me some help on an engine that I am planning.

This motor must be as light as possible and produce a great deal of power. I have planned an airship, and as soon as I can get out the design of a good engine I intend to build it. I wish to have an engine of about 40 to 50 horsepower, if possible. I intend to make it with eight cylinders and of the horizontal type, and would like to have the best dimensions possible for the cylinders so as to get the highest speed out of them. Kindly give me the best dimensions for the cylinders, crankshaft, piston, stroke of piston, intake valve, exhaust pipe and all the other parts of the engine. Also the best kind of material to use for the crankshaft, etc., thickness of the cylinder castings, and the like. It is to be an air-cooled engine, and as simple as possible.

I am only 17 years of age, and have been trying to get this information for some time before I came across "The Automobile."

Chicago, Ill. FREDERICK G. GRIME.

Without wishing to discourage you, we think by far the best advice we can give you regarding the building of such an engine is that of the philosopher regarding matrimony. Don't. More would-be aeronauts who think they have solved the problem of aerial navigation have had their hopes wrecked on the reef of a homemade motor than it would be possible to count. Whether there was ever anything in their ideas of an airship could not be told, because the motors they had built would never work, or at least not long enough to show whether the idea was of any value or not. And by "homemade" in this connection we do not necessarily mean motors that the aeronauts have constructed themselves, though we presume that is your intention, but engines which they planned and had built for them.

If your idea of aviation is of any value, go ahead and build it, and leave the building of the motor to people who are not only familiar with it, but who have the facilities for doing such intricate work. There are several makers in this country who devote a great deal of attention to the building of air-cooled motors for flying-machines, and you can buy such an engine complete and ready to run for a fraction of what you could either build it yourself or have it built for you. Then, a year or so later, when you have come to the sad conclusion that your idea of what an airship should be was not quite correct after all, you will have an engine that you can either use or get a fairly good price for if you wish to sell it—something that would not be the case if you built it yourself or had it built according to some startlingly original conception. The writer's personal experience extends to a case where an aeronaut who has been studying and experimenting for a number of years invested two or three thousand dollars in experiments of exactly the nature you have in mind. One was a six-cylinder, horizontal-opposed, air-cooled engine of the four-cycle type and the other a two-cycle, four-cylinder, horizontal-opposed motor, both of them air-cooled, and both of them as light and as powerful as it is possible to build a motor, theoretically. Though they cost more than $3,000, they could probably be bought for $30 to-day, if anyone could be found to bid that much. This is but one example of many of the same kind, which accounts for our going out of our way to tell you of it, rather than give you the dimensions asked for without comment.

MORE INFORMATION ON REVERSIBLE ENGINE.

Editor THE AUTOMOBILE:

[854.]—Can you give me any further information regarding the reversible four-cycle marine motor described on page 136 of the issue of "The Automobile" of July 25, 1907?

New York City. W. H. SCHOONMAKER.

The only information we had concerning this motor was contained in the description of it which appeared in the German paper, *Die Yacht*, published in Hamburg, Germany.

WHAT CAUSES THIS KIND OF TROUBLE?

Editor THE AUTOMOBILE:

[855.]—If it is not too much bother, will you help me out of some trouble I have been having for quite a long time? I have a four-cylinder, shaft-drive car with sliding gear transmission. Now I can throw into low, reverse, or high and not make a sound, but when I attempt to throw into second it can be heard for three or four blocks, and then I have got to shove on the lever as hard as I can. This car always did make more noise going into second than any other speed, but it is worse now. The teeth are rounded off as much on second as on any other gear, and of course the clutch comes out as much for second as when I throw into the other speeds. I have done everything I can and cannot fix it. Will be in hopes of getting a reply from you or some reader that will help me. F. R. ZEIGLER.

Oregon, Ill.

The fact that you have difficulty in engaging the pinions of that particular speed is indicative of a sprung shaft or similar lack of adjustment which prevents these two pinions from coming together as they should. Without a drawing of the gear-set of your car, or any particulars as to its design, it is difficult to say definitely just what can be afflicting it as you state. But there is no doubt that either the engaging pinion or the fast pinion of the second speed is not in its proper place, and the necessity of shoving hard on the gear-shifting lever to make them come together represents the amount of effort required to spring them into proper alignment so that they will engage. Take the gear-set down or remove the body of the car so that it will be readily accessible and test the shafts for alignment and also try the bearings for looseness. There should be no difficulty in remedying the trouble.

SOME QUERIES REGARDING EXPLOSIVE ACTION.

Editor THE AUTOMOBILE:

[856.]—Will you be so good as to answer, to the best of your ability, through the Letters Interesting and Instructive column, the following questions?

1. Would it be possible for an engine to exhaust by the expansive force of its exploded gases through an outlet valve sufficiently to draw in an explosive charge by atmospheric pressure alone (piston not moving)?

2. If not, could the charge be forced into the chamber by compressed air, and what effect would the burnt gases remaining in the chamber have upon the explosion?

3. If an explosion with 60 pounds initial compression gives a pressure of 230 pounds, will not an explosion without compression give a pressure of 170 pounds? If not, why not?

Jamesburg, N. J. W. H. CONNERS.

1. But little consideration of the conditions implied by this question is required to show that a plain cylinder, which we assume is intended by the expression "piston not moving," cannot exhaust itself through one valve as the result of an explosion so that a fresh charge will enter by atmospheric pressure alone through another. While the utility of exploding a charge in such a cylinder without imparting the pressure thus developed to a moving part and thus converting it into useful work is not plain, it may be assumed that the pressure developed by such an explosion reaches 100 pounds to the square inch. No data being supplied on the subject, it may further be assumed that the exhaust, or outlet valve, opens at this point of maximum pressure. The pent-up gases will rush out through this opening with great force at first, gradually diminishing until the remaining contents of the cylinder reach a pressure equivalent to that of the surrounding atmosphere, after which there will be no further action. As no depression or vacuum is created in the cylinder, the second valve cannot open by atmospheric pressure.

2. There is nothing to prevent forcing a second charge into the cylinder through the medium of compressed air, it being assumed that the exhaust valve has closed in the interim, and the only effect any burnt gases remaining in the cylinder would have would be that of weakening the subsequent explosion in a

measure dependent upon the proportion of burnt gas to fresh charge. Probably very few internal combustion motors on the market to-day, at least of those designed for automobile use, explode an entirely fresh charge at each power stroke—a fact that is readily apparent in the extra heavy impulse that results every time there is an explosion following one or two missed strokes.

3. If it necessarily followed that the only advantage accruing from a prior compression of the charge amounted to exactly the gain represented by the extent of this initial compression, as assumed by your figures, the compression type of engine as current to-day would not have marked such a tremendous advance over the constant-burning types such as the Brayton and Lenoir which it supplanted. Explosive pressures vary to a considerable extent in proportion to the compression, as well as to the difference in fuel value and the proportions of the mixtures. For instance, a properly proportioned mixture of gasoline vapor and air, when exploded in a closed vessel without any prior compression, has been found to reach as high as 90 pounds to the square inch. Owing to the greater difficulty in igniting an uncompressed mixture of either alcohol vapor and air or kerosene vapor and air, doubtless neither of these fuels would give as high a pressure under the circumstances, though kerosene is credited with a greater number of B. T. U. per pound than gasoline. The great increase in the pressures realized from a compressed mixture as compared with one not previously compressed, is due to a variety of causes. Pressure in this instance is synonymous with heat, and as the initial compression raises the temperature of the mixture considerably before it is fired, it will readily be seen that this is one cause of increase; then, the molecules or particles of air and gas are in far more intimate contact in the compressed mixture and less energy is required by the components of the mixture to bring about their chemical union. One of the chief causes is that, with high compression, the minimum amount of cylinder surface is presented to the heat of the explosion, and thus far less of the total amount of heat generated is wasted in the cylinder walls. This inquiry of yours brings up a question that was first definitely settled almost half a century ago by Beau de Rochas, who invented the principle of the four-cycle engine of to-day, in 1862, though the idea was not practically applied until Otto's invention of several years later. While not strictly analogous, the action of gunpowder when fired in the open air and when fired in a gun or as a blast, furnishes the most striking illustration of the advantages of compression. In the former case, even a large quantity of powder will not produce more than a puff, but confined in a cartridge or in a hole drilled in rock, a comparatively small quantity is required to develop a tremendous amount of energy.

INFORMATION ABOUT DOUBLE-ENGINE CARS.

Editor THE AUTOMOBILE:

[857.]—I would like to know if there is a car built that is equipped with two engines, each independent of the other, or is there a car that has both a gasoline motor and a steam engine on the same chassis? JAMES T. EDWORTHY.

Flandreau, S. D.

There is a car built in this country with two independent gasoline engines. It is known as the Carter Two-Engine Car. We have never heard of a gasoline motor and a steam engine being used on the same car.

IS THERE A SPARK-PLUG STANDARD?

Editor THE AUTOMOBILE:

[858.]—Will you kindly inform me if any steps have been taken toward standardizing the diameter and pitch of the tapping for spark plugs used in automobile construction? If so, where can I obtain the data respecting such action? C. R. HARRIS.

New York City.

The Mechanical Branch of the Association of Licensed Automobile Manufacturers took up the matter of standardizing spark plugs early this year, and, after considerable deliberation, adopted a plug 7-8 inch in diameter, 18 threads to the inch, the latter, we believe, being the U. S. standard. Coker F. Clarkson, in charge of the publication department of the association, 7 East Forty-second street, New York City, will doubtless supply any further information desired. These plugs, known as the A. L. A. M. standard, have now been on the market some time and probably can be bought of the majority of supply dealers.

MORE LIGHT ON THE SUBJECT OF ALUMINUM.

Editor THE AUTOMOBILE:

[859.]—The somewhat petulant letter of Mr. Birdsall, in your issue of August 1, would indicate that aluminum was in grave danger, but a real serious engineer should have located the trouble with those gear boxes in short order, very easily.

I enjoyed Mr. Blough's article, and there was a good fund of information in it; he cited the properties of various alloys, and that was all he should do. The only thing he could do in addition would be to give the percentages of the metals in the alloy; this would be dangerous, as there is not one chance in a hundred that they would be mixed right, and the value of the resulting alloy turns on this point. Take the same amounts, of the same metals, and mix in a different order, at a different heat, and cast; the chemical analysis of each result will be the same, but the grain of the alloy, the elastic limit and the tensile strength, will be different; one will be weak and the other strong, one brittle and the other elastic, one will give good service and the other is of no value.

Bearing this in mind, every serious engineer should thank The Pittsburg Reduction Company for the pains taken to give us aluminum alloys, properly mixed, in ingot form, and there is no good excuse for poor results with them; the one and only requirement at your end is to simply KNOW HOW to handle the foundry.

Mr. Birdsall wants the composition of an alloy. Here is a very good one of the rigid class: Aluminum 800, tin 20, zinc 150, copper 20, manganese 5, iron 5. Have this made by a person who knows how these should be mixed, and it will make a very strong metal, but I hardly think the Funk Foundry would get there.

If Mr. Birdsall will simply order his ingots from The Reduction Company, and cite his conditions fully, they will give him the proper metal. If he will see that it is melted in a plumbago crucible—a charcoal fire is the better—a coke fire is all right if you use 72-hour coke, but do not use 48-hour coke, or gas coke, see that the metal is not heated above a cherry color, have the molds gated properly, as aluminum requires much more study than iron on this point, aim to have the heavier sections at the top, where they will cool last and feed back from the risers, use large risers and have them large close down to the sprues, and it will be an easy matter to get good strong castings that will do the work expected of them.

Don't let the foundryman get scared because he thinks this metal is too cold to run, a few heats will convince him, and remember that to overheat aluminum is to ruin it every time.

Aluminum is in its most fluid state just before it starts to congeal, then comes a time when it is very rotten, and slight strains cause flaws; and this fact, coupled with the fact that both nitrogen and hydro-carbon gases are specially liable to be absorbed by slightly overheated aluminum, making porous castings, will account for much of the trouble with this metal.

It is unfortunate that Mr. Fay made some of the remarks that he did regarding aluminum in his article of June 6. They are quite correct for an alloy such as he cites, but the chemical analysis tells the story; it is an art alloy, a brittle, crystaline, gray-white metal, which would run very liquid and be fine for casting tin soldiers or small images, but of no earthly value in mechanics. He cites the values given in the Lake articles as impossible; but I should expect them to be readily attained. If I had a foundryman who had been given the proper alloy ingots and he did not turn out castings which would test as high as the Lake test No. 2, there would either be a change in short order or a new man.

In "The Automobile" of June 13, Elwood Haines gives aluminum a value of from 20,000 to 30,000 pounds. He has had quite a little experience with it, as he has been with the auto since its first baby days, and his machines stand up.

In short, for general auto work we have two alloys, nickel aluminum with an elastic limit of 8,000 to 12,000 pounds, ultimate tensile strength of 15,000 to 28,000 pounds, reduction of area 6 to 8 per cent., specific gravity 2.85, and moduli of elasticity 11,500,000 pounds; this would be used in cases where we wished a metal which would give before rupture. For cases where we can use a rigid metal, we can use zinc aluminum, or Sibley metal; these metals can be made as strong as good grades of cast iron, they are easily worked, take a fine finish, and do not give the trouble with cutting tools that the nickel alloy does.

The weak point of aluminum is not tensile stress, it is compressive stress; as the nickel aluminum cited above, under compression, will have an elastic limit of only 6,000 to 10,000 pounds, and an ultimate strength of only 16,000 to 24,000 pounds, and this for columns only 2 diameters long. It is so very rare to find a metal

that is weaker in compression than in stress that there may be some excuse for a neglect to give the matter proper consideration. We are not quite serious enough.

Everyone is not aware that it only requires 51.4 heat units to melt a pound of aluminum, the same number that would heat a quart of water 24.7 degrees. EDWARD F. EDGECOMBE.

Cuyahoga Falls, Ohio.

SOMETHING ABOUT TEST-PROOF LENGTHS.

Editor THE AUTOMOBILE:

[860.]—Edward F. Edgecomb, in his communication (No. 845), in commenting upon the testing of materials, states, among other things, the following: "* * * and it is hard to understand why some persons in the automobile industry are so ready to ignore the fact which the experience of years has taught. We test materials to secure facts, and it has been found that short pieces are

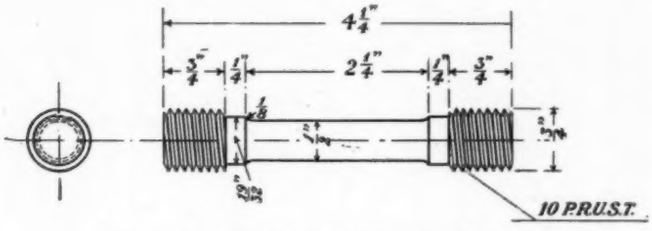


FIG. 1.—Specimen of standard international test-proof.

misleading, the eight-inch test piece has become a standard. We must not lose sight of the fact that when a test piece has been pulled, it never pulls evenly, its main elongation and reduction take place in a space of about two inches in the center of the specimen. This being the fact, it is readily seen that a four-inch test piece gives a wrong percentage of elongation."

Mr. Edgecomb will find it extremely difficult to sustain any part of his statements as quoted above for reasons, viz.,

(a) Standards become obsolete as fast as new standards take their place.

(b) The present general practice is to use test specimens as set down by The International Society for Testing Materials—see Fig. 1—and among those who have for a considerable time used this standard are the United States Government, the Association of Licensed Automobile Manufacturers, numerous steel mills, many laboratories, authorities in general, and some persons in the automobile industry to boot.

(c) The elongation and reduction of area would not be wrongly expressed on a four-inch test specimen, any more than it would were an eight-inch specimen used or for that matter a two-inch specimen, but one would not be warranted in comparing results as obtained on a proof of one length, with results as realized from another, unless one knows how to adjust for certain differences brought about by the fact that the elongation has two components, i. e. (1) the uniform elongation in proportion to length between enlargements; (2) the subsequent local elongation. The subsequent local elongation depends upon diameter, while the proportional elongation depends upon length.

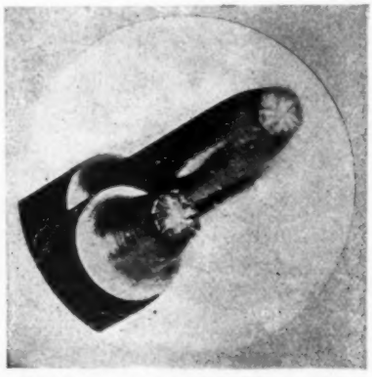


FIG. 2.—Contraction at point of rupture.

(d) Rupture does not necessarily take place at the mid-distance between enlargements, but at the weakest point, and the local elongation, as well as the greatest reduction of area, will be in the zone of rupture.

(e) The international "proof" obtains for all steel work, of a nature enabling one to turn a specimen of the desired dimensions from the material to be tested, and as this test-proof or specimen, is the smallest of all so far generally used, it enables one to cut a "cupon" from a part to be investigated, even if the part is quite small. Plates of course, cannot conform to this requirement unless the plates are over one-half inch in thickness, and in plate work for boilers, etc., it is not uncommon to take the distance six inches between enlargements.

(f) Figure 2 illustrates the local contraction when an international test specimen is pulled to rupture, and for equal diameters, considering precisely the same material in each case, length would not alter this phase of the test, but the uniform elongation takes into account the length between enlargements, and is, of course, a function of lengths, but in products as cast iron or aluminum, in which the phenomena of local contraction is absent, the distance between enlargements might well be, and generally is, eight inches, the object being that of enabling one to realize readable values, since without local phenomena the elongation per unit length is but slight.

(g) Sudden changes of shape, grooves, shoulders and irregularities of any sort between enlargements would have a marked effect on the readings, and it is to such matters one might look for false accounts.

(h) Suddenly applied loads during test would augment the elongation readings, while tensility might show greater by prolonging the time of test.

In conclusion, then, the distance between enlargements of the test specimen can be mostly anything between, say, two and ten inches, and still show the strength of the material; but comparison is best made if the length is common for all test specimens, whereas error can result from methods not mentioned by Mr. Edgecomb.

New York City. THOS. J. FAY.

WHAT IS THE CAUSE OF THIS FLOODING?

Editor THE AUTOMOBILE:

[861.]—I have a Schebler carbureter and have trouble with it flooding. I put in a new float and do not think the priming pin is too long, as it does not always flood. Some times after I leave it awhile, it will be all right, and then again my gasoline runs all over the street. I have come to the conclusion that the trouble is dirt, and thought of putting a strainer on in the feed pipe. Do you think that will fix it? I notice an ad of the Hatcher Strainer in your paper, on page 70, July 4 issue, which I thought I might get.

Oakland, Cal. J. F. McMATH.

There appears to be little doubt, from your statement of the nature of the trouble, that the latter will be found to be due to some derangement of the float valve and not at all to the float, as you have supposed. A strainer is an excellent precaution, but we do not think dirt is the cause of the trouble. The float of the Schebler carbureter is of the annular type, surrounding the mixing chamber, and unless you found that the old float had become loggy or so heavy as to float much below its accustomed level, there was no necessity of replacing it. The valve gear will be found attached at a point on the circumference of the float in the shape of a short arm, to the end of which is attached the valve shutting off the flow of gasoline when the float reaches a predetermined level. It is the failure of this valve to seat properly that causes the flooding and the intermittent nature of the trouble is due to the fact that it is only at times that the valve does not work. Examine all the parts carefully and see if either the arm or the vertical rod is not slightly bent, or if any of the connections have worked loose, as the amount of movement necessary is so slight that very little derangement is needed to prevent the proper working of this part of a carbureter. Doubtless in your case the trouble is slight, and as long as the car is run over smooth roads it does not appear, but as soon as it is given a more or less severe jolt the parts are jarred out of place with the result that the float does not do its duty by closing the valve. If an examination does not disclose the defect, compare it with a new Schebler or communicate with the makers.

A TIMELY WARNING FROM PENNSYLVANIA.

Editor THE AUTOMOBILE:

[862.]—Notify all tourists that expect to come over the National Pike from Wheeling east, that at Brownsville, Pa., where the road crossing the Monongahela river is carried on a toll bridge, that the authorities await their arrival, and if not supplied with the Pennsylvania license tags, they are promptly charged $10 and an order taken for the tags at $3, with a necessary hold-up of three days, or arrangements may be made to have the tags delivered at the objective point, to be ready for the return trip.

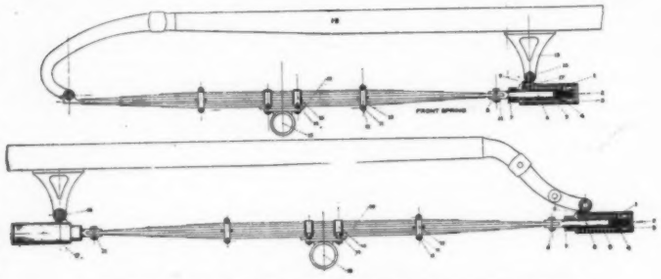
As this point is 10 miles in from the State line, there is no escape of the fine, so it will be less trouble and cheaper for through tourists to arrive here fully equipped with the legal requirements.

Brownsville, Pa. ALFRED C. SMITH, M.D.

NOVEL FORM OF SPRING SUSPENSION.

Under the title of the Burgess double-tension spring, there has been invented what may most aptly be termed a combined set of springs and shock absorbers for the purpose of improving automobile suspension. While this will serve to give a rough general idea of the construction of the device, which will further be made clear by reference to the drawings showing a front and rear spring of this type, there are a number of other differences which serve to place these springs in a class of their own, and probably the description written by the inventor himself, Charles Burgess, Jr., Wenona, Ill., will best suffice to make these numerous points clear:

"Referring particularly to the drawings, the axle (15) of the car to which the wheels thereof are secured is attached to the springs (20) by means of the plates (14) and clips (13), which is the common form of construction. The spring (20) consists of a center leaf as shown, with laminations secured thereto on each side, the number of laminations depending entirely upon the strength required, which is determined according to the static weight of the car body or the maximum weight of the car body, according to the preferred form of computing what the strength of any spring should be. The laminations being interposed on each side of the main or central spring (20), I provide the same with guards, which are formed integral therewith and on each



DETAILS OF THE BURGESS DOUBLE-TENSION SPRING.

side thereof, through which vertical guides are slidably mounted, having eyes (12) at each end thereof in which the roller bearings (11) are journaled and are normally in contact with the upper and lower leaves. When the spring is deflected there is a movement of the laminations, either forward or backward, longitudinally of the main spring, and by the employment of the vertical guides (10) the laminations or leaves are kept in alinement during this movement and are greatly assisted by the roller bearings, which eliminate the friction between the leaves to a great extent. The depending hangers (18) are not perferably constructed, as the cylinders may be secured either above, below, in center or on ends of same, but in the drawings they are secured above, between the depending lugs, with bolts (16), which pass through the eyes at the lower portion of the depending hanger (18) as well as through the aperture formed integral with the cylinder casting. This construction gives the cylinder a free, vertical, rocking movement between the lower portion of the depending hanger (18), thus eliminating all friction of working parts of construction, the longitudinal axial line of springs and buffer springs being in the same horizontal plane. The cylinder (17) and head are cast in one, with the head aperture to receive a packing gland (7), through which the piston rod (6) is adapted to slide. The caps of the cylinder, containing a male thread, are secured to the ends thereof by means of a female thread within said cylinders. Adjustably mounted upon the piston rod (6) is the piston (1), the adjustable feature being accomplished by means of the piston rod being threaded as shown and adapted to co-operate with a bore provided with a female thread within the piston. The piston is provided with a cross sectional slot for the purpose of containing the key, which passes through and within the apertures in the piston rod (2). Interposed between the piston and cylinder-head of the cylinder is the buffer spring (5), the size of the buffer springs being governed entirely by the end tension sought to be procured to the main spring (20). Each cylinder is provided with an oil plug (9) in order that oil may be inserted, not only to serve as a lubricant, but also to act as a fluid brake therein. Each cylinder is completely filled with oil, and upon the forward or backward movement of the piston the oil is forced on either side thereof through the longitudinal aperture (4), thus giving resistance to the piston according to its movement, allowing the spring to move quickly when idle and slowly when working; that is, it absorbs the jars in the movement of the piston instead of transmitting them into a series of jumps to the body of the car. The piston rod (6) of each cylinder extends out and beyond the cylinder head and is provided with a slot (21) adopted to co-operate with the center leaf at each end of the main spring, and is constructed so that the piston rod (6) and center leaf of the main spring are solidly secured together by means of the bolts passing through the end of the center leaf of the main spring, this being suitably apertured, thereby preventing any vertical or horizontal movement between the piston rod and the centre leaf of the main spring relative to each other."

From the foregoing it will be apparent that, while the springs themselves differ in a great many detailed points from those in current use, the invention is practically a combined spring and shock-absorber.

WHAT ONE AMERICAN LEARNED ABROAD.

Emil Grossman, president of the Motor Car Equipment Co., the National Sales Corporation of New York, and the International Sales Corporation of Paris, who left for an extensive European trip May 23, recently returned on the *Kronprinz Wilhelm*. Mr. Grossman made exclusive selling agencies in France, Italy, Germany, England, Russia, Sweden, Denmark, Belgium and Holland for the line of goods handled by the National Sales Corporation, and also made advantageous arrangements with several European manufacturers for representation in America.

"The automobile outlook in Europe is exceedingly good," says Mr. Grossman, "particularly in the manufacture of commercial vehicles and taximeter cabs. The industry in these lines is becoming enormous; practically every large mercantile house, as well as factories, and more particularly breweries, are employing these trucks. The gasoline trucks are growing in favor, although a large number of electric trucks are also manufactured. Several of the automobile manufacturers have orders for thousands of taximeter cabs to be delivered within the next two years. As a rule, the taximeter cabs are light in construction, of medium horsepower and very easy to control. They are well patronized everywhere, costing only about 10 to 15 per cent. more than the horse cab.

"A very large number of touring cars are being rented by visitors for trips of one to three weeks at an expenditure of 100 to 125 francs per day ($20 to $25), which includes all expenses of machine, supplies and driver. Considering the annoyance caused to foreigners who do not understand the customs regulations of the different countries, and the expense of tires, benzine (which costs nearly three times as much as in America) and other expenses, this new method is a pleasant and less expensive form in which to tour than to use one's own car. The machines are insured against accident by the companies renting them. The company doing the largest touring car business in France is the Co-operative Association of Chauffeurs, each driver being a stockholder in the company; and, naturally, the drivers are careful not to meet with accidents or to expend large sums for tires and supplies.

"In every factory of any size American machinery is employed. In one of the largest factories visited, out of 1,680 machines in use over 1,200 were of American manufacture. The German manufacturers, however, are making great inroads on the American manufacturers of automatic machines, and unless radical improvements are made in America the German manufacturers are sure to capture a big share of the automatic machinery trade in Europe."

Uniformity of Europe's 1908 Racing Conditions Finds General Favor

AFTER a sufficient interval to realize the full import of the unification of race conditions decided upon at the Ostend conference, European constructors and automobilists express themselves as satisfied. The leaders of the industry are not absolutely united on the best working basis to improve the breed of automobiles and give interesting racing, but they are all convinced that the conditions for 1908 are infinitely better than the muddle of the past two or three years. A few French automobilists try to belittle the work of the conference by pointing out that, although every motoring nation, except America, formally agreed to the new conditions, none of them is bound to put the laws into practice, and the multiplicity of conditions in 1907 may continue in 1908.

Mervyn O'Gorman, a British delegate, while approving the decision of the conference, believes that full liberty in construction may lead to progress at present believed impossible, and offers an "O'Gorman No-limit Trophy" to be competed for annually over not less than 100 miles on the Brooklands track. It is obvious, however, that the conference conditions will predominate next year. A few organizing bodies may conservatively stick to their present rules, only to find, when it is too late to remedy the evil, that manufacturers do not build cars for their own pleasure and prefer to produce racers eligible for the largest number of events.

An example of the evils of multiplicity in automobile race conditions was shown in European motor-boat events a couple of years ago, when an interesting sport became the laughing stock of the world and received such a blow that it is yet in a sickly condition.

This year there have been three limited-fuel races in France, with 30, 15 and 19 liters to the 100 kilometers; two in England on different allowances of gasoline; special conditions for the Targa Florio, the Ardennes circuit, and the German Emperor's race. One more meet, on the Brescia circuit, has yet to be held, with two distinct conditions. The Vanderbilt race, had that event been possible this year, would probably have added further tints to the coat of many colors.

Next season there will be one set of racers for practically all the national tests, the characteristics of the machines being bore not exceeding 155 millimeters (6.1 inches) for four-cylinder engines, and a minimum weight of 1,100 kilos (2,425 pounds). Track races, hill-climbs and short-distance events will not be affected by the new rules. Thus an outlet will be provided for those objecting to being bound down by fixed rules.

Of the varied methods of classification adopted this year, limited cylinder area (bore and stroke) has united the largest number of competitors, being employed for the German Emperor's race, one of the Ardennes races, and for the coming Florio cup race in Italy. Yet it is the one which has been most severely criticised. Perhaps there is a little jealousy in their charges, but it is instructive to note the objections brought against a limited cylinder area by French leaders. Simplicity, ease of application and an increase of power are admitted to be in its favor. The charges against it are that it develops high-speed motors which suffer from abnormal wear and vibration, and that the increase in power is only obtained at the cost of excessive fuel consumption. The Fiat which won the German Emperor's race and the Fiat victorious in the French Grand Prix consumed practically the same amount of gasoline per 100 kilometers, yet the former had thirty horsepower less than the latter. The increased power obtained does not fascinate the French critic, one well-known writer declaring that a motor 152 by 110 bore and stroke and another 130 by 150 require as fuel 50 liters an hour for the former and 35 liters for the latter. The first develops 100 horsepower, the second 70. Supposing them of equal weight, for five hours' running without refilling the tank the weight per horsepower of the group motor and fuel tank is the same. The conclusion drawn, and which is generally acquiesced in, is that the regulation by cylinder area should be abandoned. Conditions considered the most advantageous are as long a stroke as possible with a moderate engine speed.

When the matter came before the conference opinion immediately rallied to a limitation of the bore only, leaving the determination of engine stroke to the fancy of constructors. France would have preferred a bore of 160 millimeters, which is only slightly below the average of Grand Prix racers, their object in maintaining this standard being to impress the public with the high rate of travel and to put tires to the most severe test, abolishing the use of dismountable rims to further this end. Germany did not defend her own bore and stroke limitation scheme, but asked for a bore limited to 135 millimeters, with the object of creating a *rapprochement* between the racer and the ordinary touring car. England acted as a mediator, and finally got the two extremists to unite on a bore of 155 millimeters and a minimum weight of 2,425 pounds. Next year's speed will probably be less than this year's record, though certain sanguinary individuals hope to maintain the standard despite the limitations. Mechanical conditions, however, are fairly satisfactory, the limitation of bore developing engines of long stroke and slow rotation, with a consequent diminution of friction. The chief objection brought against it is the difficulty of applying it to other than four-cylinder engines. Somebody has asked what bore would be allowed for a two-cycle four-cylinder engine, and the conference itself left to a special committee the task of determining conditions for six- and eight-cylinder engines.

French authorities had not the courage or the inclination to defend their own limited-fuel formula, under which they were beaten in the Grand Prix, but are not tired of sounding its praises in the technical press. It produced an excellent type of engine; without any increase in size of motor it gave a big advance in speed, and by showing the economy of the

automobile it touched a matter in which the public generally is interested. But it was too susceptible to atmospheric influences—French cars tuned up for bad beather were defeated on a fine day; it was delicate in its application, necessitating experienced organizers and close surveillance throughout—and it had to go.

There is an enormous economy in being able to build three machines only in place of three or four distinct types, and enter them in half a dozen important races. But there is a still further advantage, which will be appreciated more by foreign builders than by the leading French firms: Any constructor may begin work now and produce a set of machines for a series of races to commence next April. He has at least eight months in which to design, construct and try out his cars, compared with an interval of five or six months on previous occasions. A June race announced in January allowed such firms as Fiat, Renault and Mercedes to compete in a prepared condition, but it placed at a decided disadvantage firms who had less experience in racing or who were separated by an ocean from the scene of the contest. Walter Christie was not the only American engineer who studied the conditions of the Grand Prix. Other firms—they were several—examined the rules, considered the date and distance, and decided it would be money thrown away.

As half a dozen American firms do some business in Europe—principally in England—and many more are represented across the Atlantic by the increasing crowds of annual tourists, it is not unreasonable to suppose that there will next year be a more adequate representation of cars from this country in the great speed tests of the old world. To send a team of three cars, well tried out, to Europe for three months, where they could compete in at least three races, would certainly be more profitable than to ship over one or two hastily prepared Gordon Bennett racers, as has been done more than once in the past. Supposing Europe's rules are adopted for the 1908 Vanderbilt race, a larger foreign representation may be expected, as practically every firm of importance will have a machine or set of machines available for the contest.

RACE METHODS TO CATCH SPEED VIOLATORS.

INDIANAPOLIS, IND., Aug. 12.—A crusade against alleged violators of the automobile speed law of the State has been started by the local police, and the method pursued is believed to be wholly original with the department. Chief Robert Metzger has instigated the method of running down fast drivers with the White steam touring car purchased by the department some time ago. As a result residents of the exclusive North Side districts are being treated to the most spectacular races at from twenty-five to forty miles an hour clip that the city has ever seen.

Naturally the system is a dangerous one, so dangerous that it has called down the condemnation of some of the best citizens of the city. The system is not employed in day time, as the police car is so well known. A speed indicator and three patrolmen in plain clothes, as well as one of the police chauffeurs, are employed in the work, and the testimony of the officer who watches the speed indicator, together with the record of the latter, is accepted as conclusive evidence in the local police court.

The automobile drivers are first timed, then commanded to stop. If they fail to do so, the driver of the police machine executes a series of maneuvers that forces the automobile of the victim against the curb and wedges him in, making escape impossible and a collision inevitable.

Various methods of catching speed violators have been tried by the police, none of which have given satisfaction until the one now in use. Chief Metzger insists that the law prohibiting a speed greater than fifteen miles an hour in residence districts will be strictly enforced. Violators of the law are fined $1 and costs, amounting to $11, and all except two have pleaded guilty.

AUTOS PERMITTED .N NATIONAL PARKS.

WASHINGTON, D. C., Aug. 12.—Several weeks ago a number of automobilists of Seattle, Wash., requested permission to take their cars into the Mount Rainier National Park, but the Interior Department denied the request, as there was a strict rule prohibiting automobiles in the various national parks. The unjustness of this rule was pointed out to Secretary of the Interior Garfield during his recent visit to the Northwest, and immediately upon his return to this city he directed that a new regulation be issued permitting automobiles to be taken into the Mount Rainier National Park.

At the Interior Department it was stated that the new ruling is of general importance, as it makes a change in the management of the national parks, in which automobiles have not heretofore been permitted to operate, because of the dangerous character of some of the roads and the timidity of horses not accustomed to the machines.

It was further stated that the new rule is in the nature of an experiment and will be effective but one year. If the experiment is a success, however, it is considered probable that the innovation will soon extend to other parks and thus open up many fine runs that have heretofore been denied automobilists. The speed limit has been set at six miles an hour, except in long, open stretches, which are numerous.

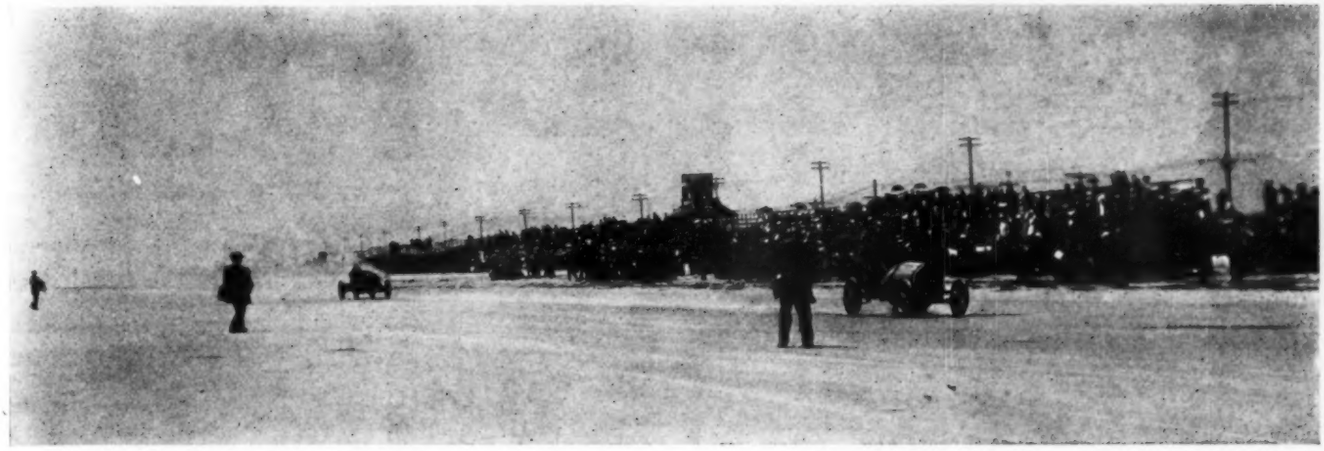
OILING ROAD AT $100 PER MILE.

SEATTLE, WASH., Aug. 10.—Oil as an allayer of dust has been given its first, and very successful, trial in the State of Washington. One of the best stretches of road in the State is the macadamized section leading to the Meadows race track, where there is now a season of running races on. Many automobiles go out daily, not only privately owned cars, but such as are used for hire, and in fact the race meet is proving quite a mint to drivers of this class, as the street car service is wretched. Every machine would raise clouds of dust, and so County Engineer Valentine had the road sprinkled with common fuel oil, which contains about 40 per cent. of asphalt and makes an asphalt coating for the macadam. So successful has this proved that Mr. Valentine has decided to sprinkle the road twice a year, once late in the Fall, before the Winter rains begin, and early in the Spring, after they have ceased. He is of the opinion that this will suffice. This stretch of road also leads to Tacoma and is destined to become a part of the boulevard to skirt the shores of Puget Sound. Mr. Valentine is also planning to oil all macadam roads in King county. The expense is figured at $100 a mile.

DASTARDLY WORK OF AN AUTO WRECKER.

WINCHESTER, VA., Aug. 10.—Last Tuesday night some wretch attempted to wreck the automobile of "Jack" Hardesty on the Berryville-Winchester turnpike, about one mile west of Berryville, by placing a log across the road. The machine contained Miss Cammilla Rurtherford and Miss May Bushnell, Mr. Hardesty driving. When the auto struck the log the speed had been slackened down to about ten miles per hour, but the force of the impact was sufficient to throw Miss Bushnell from the machine. She died four hours later in the hospital of Dr. Tucker at Berryville, to which place she was rapidly taken in Mr. Hardesty's partially wrecked machine.

The matter has stirred up considerable excitement in this section and several arrests have been made. At a preliminary hearing a rural resident by the name of Simmonds, arrested upon circumstantial evidence, failed to prove an alibi and has been held without bail awaiting the action of the Grand Jury. No blame attaches to Mr. Hardesty, as he is a careful driver and well thought of generally. Prejudice against automobiles rather than personal grudge prompted the dastardly deed. Automobilists generally are greatly incensed over the happening and will exert every effort to have the guilty parties heavily punished.



ROBERTS IN THE HARRY HOUPT THOMAS VANDERBILT CUP RACER THAT MADE THE FASTEST MILE AT ATLANTIC CITY MEET.

CLOSING DAY AT ATLANTIC CITY MEET.

ATLANTIC CITY, N. J., Aug. 7.—The wind-up of the racing program of the Automobile Carnival came to-day with two outstanding features: in a race between two Stearns machines and an Oldsmobile the Stearns finished dead heat, and in running against time Montague Roberts made the mile in :39 1-5. Duncan Curry, of the New York *American*, was a conscientious referee.

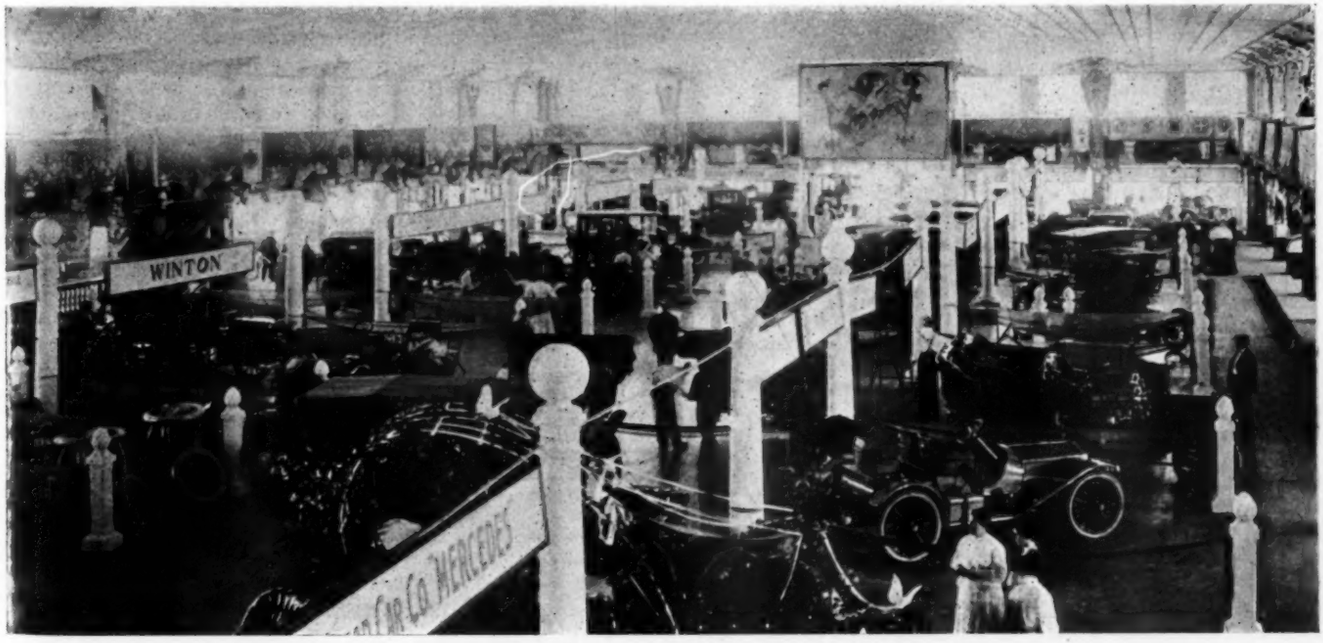
Guy Vaughan and G. W. Hoffmann handled the two Stearns and Tom Berger took charge of the 30-horsepower Oldsmobile, each machine carrying four passengers. With a flying start, all kept together for three-quarters of a mile, when the two Stearns gradually pulled away from the Oldsmobile and rushed over the line neck and neck, the Olds being about fifteen yards in the rear.

Owing to an annoying delay in getting the various heats run off, there was a meager attendance when Roberts rushed away on his flight against time. Taking the extreme outside course, where the beach was hardest, the six-cylinder Thomas made the time of 39 1-5 seconds in handy fashion. The performance is only 3 4-5 seconds slower than Walter Christie's mark, made when the beach was in ideal condition. W. H. Wray made a time trial of 59 4-5 seconds on a Simplex motorcycle.

During the afternoon an automobile parade was held on Pacific avenue; the number of participants, the crowd of spectators and the favorable weather all contributed to make it a success.

REPRESENTATIVE SHOWING ON THE PIER.

ATLANTIC CITY, N. J., Aug. 9.—Yesterday morning marked the opening of Atlantic City's first annual automobile show, and to-day, with more than 100 cars on view, most of them 1908 models not long from the factories, the show is in full blast, and a fitting feature of the week's carnival. The E. R. Thomas Motor Company's New York branch is one of the big exhibitors, though quite a number of the leading makes are well represented. For instance, the Stearns and the Oldsmobile are being shown by the Motor Shop of Philadelphia. The Acme is shown by its makers, the Acme Motor Car Company, Reading, Pa., while the Autocar Company, Ardmore, Pa., also exhibits its own product. West Stillman, of Philadelphia, is showing the Mercedes and the C. G. V. is also on view, while Gilbert S. Smith, of the Hamilton Auto Company, 206 North Broad street, Philadelphia, is really the cock of the walk, as he claims to be the only man here with a full line of 1908 models, which arrived here by express only yesterday. Another well-known Philadelphia house with a prominent exhibit is the Titman-Leeds Company, in charge of E. C. Leeds, who is showing the Studebaker, Pope-Hartford and Matheson. The Keystone Motor Car Company, of Philadelphia, shows the Packard and Buick, the exhibit being in charge of E. C. Johnson. Armand T. Nichols, whose car won several prizes in the parade for decorations, has it on exhibition.



INTERIOR OF YOUNG'S MILLION DOLLAR PIER AT ATLANTIC CITY, WHERE THE AUTOMOBILE SHOW WAS HELD.

LATE SUMMER HAPPENINGS IN CLUB LAND

MINNESOTA ASSOCIATION PLANS A BIG RUN.

ST. PAUL, MINN., Aug. 13.—The Minnesota State Automobile Association is to open the new tri-city road with what will be a small-sized A. A. A. tour, the latter part of August or early in September. Fifty cars are expected to participate and the run, which will be to Duluth, will be held under the same conditions as the national event. The tri-city road is the outcome of a plan of local autoists to connect Duluth with the Twin Cities that has been much talked of but only assumed definite shape this Summer. The autoists of Duluth raised a fund of $3,000, which has been spent on the roads leading out of the Zenith City, while the commissioners of several other counties have co-operated with the State Association in repairing the roads. The latter are all to be posted and a Twin City dealer has offered the association 5,000 complete sign posts provided the association will place them. It is expected that a number of Duluth autoists will come here in order to participate in the run.

The St. Paul Automobile Club also has an event of its own on its hands—it is planning to hold a hill climb within the next few weeks. Rufus Edwards is chairman of the committee in charge and active preparations are under way. A number of successful hill climbs have been held across the river and local autoists are anxious to show what they can do in this line. It is probable that Ramsey Hill will be selected as the site of the climb, as it is the most desirable hill in the city, though at present it is badly encumbered with loose rock, which will have to be removed before it can be used, and the club is investigating the matter to see if this can be done properly in time for the climb.

ROCHESTER'S BELATED ORPHANS' DAY.

ROCHESTER, N. Y., Aug. 13.—Although it is somewhat later in the season as compared with other celebrations, Rochester's treat to the orphans lost none of its importance on that account. The members of the Rochester Automobile Club bent every effort on the successful outcome of their Orphans' Day celebration, and there was no doubt that they did succeed in the treat given 422 waifs from the local Industrial Home. Headed by a band, the parade got under way at 1:30 with no less than 140 cars in line, and more at the disposal of the club committee had the latter called for them—certainly an unusual situation where similar events are concerned, as there is usually a dearth of vehicles to transport the prospective passengers, despite the number that can be crowded into a car. The children were taken to Ontario Beach Park and treated to its numerous attractions, with plenty of pink lemonade on the side to make things run smoothly. The return trip was undertaken at 5:30 P.M., after a most enjoyable afternoon. The club was aided in its entertaining by Larry Saxton, the popcorn specialist, who donated all of his product the youngsters could consume, while an equally liberal supply of cake was contributed by J. A. Seel. J. Hungerford Smith was responsible for the pink lemonade, and the Rochester Candy Company gave each orphan a two-pound box of sweets.

AURORA CLUB FOR LAW ENFORCEMENT.

AURORA, ILL., Aug. 13.—In order to further the work of bringing offenders to bar, the Aurora Automobile Club has communicated with State's Attorney Reid and will render all possible assistance in bringing about a strict compliance with the new statute now in force in Illinois. Many of the members of the club have not gone to the trouble of taking out licenses under the new law and the secretary has offered to supply a list of the delinquents to the State, so that both in checking the reckless speeding evil and in bringing other offenders to bar the State's Attorney will have inside information.

SCHENECTADY CLUB BEGINS ACTIVE WORK.

SCHENECTADY, N. Y., Aug. 13.—The newly organized Automobile Club of Schenectady is already beginning to justify its existence by taking up the good roads cause in this part of the State. At a recent meeting held at the Mohawk Club it was voted to purchase 100 signs, half of which will be painted to show the distance to Schenectady from outlying districts, while the remainder will be used for general marking in the surrounding country. It was also voted to purchase twenty-five danger signs, which will be placed at a number of bad places along the roads in the vicinity, including spots on the Troy road and in the neighborhood of the Boston and Maine Railroad bridges, which are particularly nasty places for one not familiar with them.

The touring committee is considering plans and later in the Fall will arrange an automobile day for the inmates of both the Children's Home and the Day Nursery.

The Board of Governors of the club is as follows: C. H. Benedict, Gerardus Smith, J. W. Yelverton, A. F. Knight, George H. Hill, H. S. DeForest, W. Dewey Loucks, H. G. Chatain and N. I. Schermerhorn. Following are the committees: Membership, George H. Hill, Dr. H. A. Staley, Charles Blittersdorf, T. H. Soren, Edwin Clute; exhibition tours and contests, H. G. Chatain, J. W. Yelverton, Dr. W. P. Faust, B. A. Burtiss, J. W. Clute; laws and ordinances, W. Dewey Loucks, E. C. Angle, A. G. Davis, Hinsdill Parsons, W. W. Wemple; good roads, H. S. DeForest, Earl Furman, E. F. Peck, F. R. Champion, George Close; grievances, N. I. Schermerhorn, Frank McClelland, Gerardus Smith, August Kruesi, H. Scudder.

PRESIDENT DUTTENHOFFER GIVES ADVICE.

CINCINNATI, O., Aug. 13.—Just back from a five weeks' trip with his family, the entire course of which was not marked by a mishap, not even so much as a puncture, President Val Duttenhoffer, of the Cincinnati Automobile Club, states that it is his intention to recommend at the next meeting of the Board of Governors of the club that the new speed ordinance which it has recently had prepared for introduction before the council be dropped.

"Let the present ordinance stand," says Mr. Duttenhoffer, as the result of his observations in New England. "It will do as well as any, and there is no use of drawing any more stringent lines around ourselves than the present ordinance provides. Autoists are far more liberally treated in the East than they are here, as everywhere in New England we found a straight twenty-mile-an-hour limit. At points where there were special rates of speed, signs were posted telling how fast autos could proceed. That's the way it should be here in the West, but the West doesn't seem to be willing to pursue so liberal and advanced a policy."

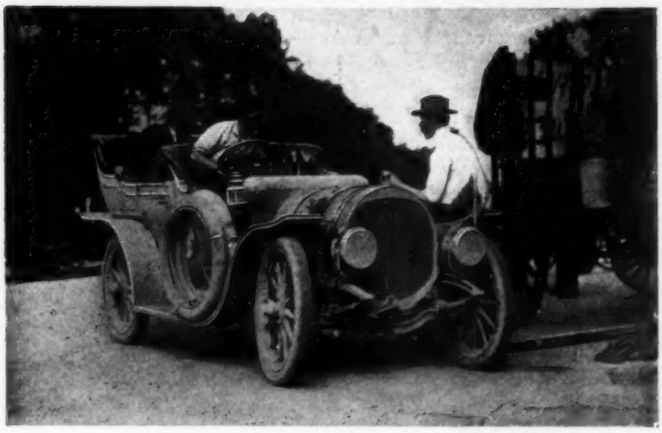
PROSPERITY OF LARGEST CLUB IN COUNTRY.

NEW YORK, Aug. 12.—An official announcement from the Automobile Club of America tells a story of promising prosperity, coupled with large gains in membership that are equaled by few similar organizations anywhere. The following comes from the club's publicity department:

The Automobile Club of America took possession of its new clubhouse and garage on West Fifty-fourth street, April 18 last. On the first day of August, three months after its occupancy, $20,000 of the second mortgage bonds were redeemed and cancelled.

Much satisfaction is expressed among the members at this evidence of the club's stability and progressiveness, and the governors are now planning to have at an early date in the Fall a meeting of the club members for the purpose of burning the cancelled bonds. Further blocks of the bonds will be redeemed at short intervals.

The membership of the club is increasing very rapidly, and before the close of the year promises to reach the 2,000 mark.



PETERSON, THE PERSISTENT, AND HIS METEOR.

A PERSISTENT A. A. A. TOURIST.

As a try-out of a new car the 1,500 miles pounding of the A. A. A. tour was sufficient to satisfy the strenuous nature of most men and machines. A. L. Petersen, of the Cleveland Automobile Club, undertook this kind of trial trip for his Meteor machine, and although failing to finish among the perfect scorers, owing to a series of unfortunate road accidents, gave a display of skill and dogged perseverence of more than ordinary interest.

On the second day's run from Toledo to South Bend, over roads of such a difficult nature that fourteen cars incurred penalization, a broken bolt on the steering gear caused a delay which, on such muddy roads, it was impossible to regain later. Trouble followed on the following day, when, in order to clear a buggy obstructing the road, Petersen shot his car over a six-foot ditch and cleared a barbed wire fence. No serious injury was done either to car or men, but it was fully two hours before the Meteor could be got back to the greasy highway. Three uneventful days followed, with control reached on time, notwithstanding a leaky radiator as the result of the previous leap. Finally, on a quiet corner of the road in Ohio, with a supply of water handy and a cottage fifty yards away up the hill, it was decided to take down the radiator and make a thorough repair. It was not the easiest of tasks to solder a radiator on the road with the fire for heating the iron fifty yards away. When the job was finished it was found that the cranking handle, which had been bent through the fall of the car, broke open the radiator tubes whenever the motor was cranked.

At Pittsburg the cranking handle was dismounted, the radiator soldered, and the engine started by pushing the car. This seemed satisfactory and a clean run was hoped for. Coming out of town a trolley car driver stopped his vehicle and signalled the automobile to pass ahead. When they were opposite, the town vehicle driver turned on current, the result being a bent front axle and a delay of several hours. With no thought of abandoning, Petersen commenced repairs, and when the main body got up at Baltimore next morning he was there to greet them, and there was no further delay in the run to New York City.

A few days later, while Petersen was driving his car homeward and westward, passing through Schenectady, N. Y., it skidded on striking the sprinkled asphalt pavement, turned completely round and hit a trolley pole, smashing the rear axle and the rear wheel. Forty trolley cars were held up while the disabled Meteor was being removed. But Petersen made repairs and will persist again.

Among several storage battery patents recently granted to an American inventor, one is for a new method of preventing the negative plates from losing their capacity. The active spongy lead is impregnated with an inert material like carbon, and in this way the passageway for the diffusion of the electrolyte into the pores of the plate are maintained intact.

AUTO EXPORTS CONSTANTLY ADVANCING.

At the present rate of increase it is a matter of but a comparatively short time before the value of the automobiles and parts being sent out of this country will exceed $1,000,000 monthly. For an industry that has hardly been in a position to export its product for half a decade, this seems almost inconceivable, but a glance at the figures compiled by the Department of Commerce and Labor tell the story of the constant growth of the foreign trade in American automobiles better than a long dissertation on the subject possibly could.

The fiscal year ends with June and the Government report just to hand shows that during the month of June, 1906, automobiles and parts to the value of $539,268 were sent out of the country, as compared with $732,054 for June, 1907, while the years ending with those months showed totals of $3,497,016 and $5,502,241 respectively. For the year ending June, 1905, the total was but $2,481,243, from which it will be evident that the figures have considerably more than doubled in the short space of two years. Doubtless the most significant fact to be gleaned from a review of these monthly reports is to be found in the items representing the takings of automobile-producing countries.

In short, it will be readily seen that the bulk of the export trade in American automobiles is to Great Britain and the Continent, the amounts shipped to the remainder of the globe being comparatively insignificant, with such exceptions as Canada and Mexico. June, 1907, marked the end of the first year in which detailed figures separating the value of complete cars and parts have been kept, with the result that it is seen that no less than 2,862 cars were sent abroad in the last twelvemonth.

The report in detail is as follows:

	June		Twelve Months Ending June			
	1906	1907	1906		1907	
Automobiles and Parts of—						
Autom'biles, No.	$539,268	295 $669,570	$3,497,016	2,862	$4,890,886	
Parts of		62,484			611,355	
Exported to—						
United Kingdom	194,709	310,632	948,995		1,530,304	
France	56,495	67,802	282,317		512,524	
Germany	20,107	36,487	99,732		155,623	
Italy	20,612	11,675	265,970		254,604	
Other Europe	40,959	61,124	199,589		288,921	
Brit. No. America	92,429	154,923	648,438		1,175,334	
Mexico	80,934	49,980	422,626		812,639	
West Indies and Bermuda	4,089	8,385	241,353		207,390	
South America	18,899	19,641	96,174		204,211	
Brit. East Indies	2,047	682	37,644		34,608	
Brit. Australasia	5,353	4,974	160,944		207,715	
Other Asia and Oceania	603	5,489	50,335		97,050	
Africa	125	61	28,529		8,874	
Other Countries	1,007	100	14,370		12,354	
Total automo'les and parts of	$539,268	$732,054	$3,497,016		$5,502,241	

ALFRED REEVES, GENERAL MANAGER A. M. C. M. A.

Mr. Reeves is a great believer in the health-giving value of automobiling, and daily he is to be seen with his family in the vicinity of his new home at Ludlow, N. Y. Master Robert Reeves, the younger son, has a strong desire to replace his father at the wheel of the Maxwell.

THE AUTOMOBILE

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"	" This Issue	16,500
"	" Since January 1,	537,650

Aluminum as a Material for Automobile Construction. To the designer of earlier days, who was confronted with the problem of carrying a cumbersome, low-powered motor and an equally weighty chassis, on pneumatic tires, aluminum came as a godsend. It meant the saving of many valuable pounds in both motor and transmission, and was universally availed of for this purpose, even though its employment did not always bring that satisfaction in service that was to be desired, as cast aluminum—the form in which it was most generally used—has the grave defect of weakness.

And it is this characteristic, as well as the desirability of its use as a material for automobile construction at all, that is now forming a bone of contention. There are too many sides to the question to permit of their discussion at length here, and the sole object is to throw a little light on a state of affairs that may seem inexplicable to the layman. When an engineer states that he has analyzed certain specimens of a material, such as aluminum, and has also subjected proofs to the usual tests with stated results, that do not throw any credit on the material in question, it is hardly logical to immediately jump to the conclusion that all material which passes under the same generic name is, to put it in the vernacular, rotten. Nor does it follow when a reputed authority takes up the cudgels in defense of aluminum and his livelihood and says, "Here is a sample of what can be done and what is being done," that the first engineer was away off or all wrong. Doubtless the test pieces he examined were rotten, and in all probability there are a great many crankcases and gearboxes to-day that are equally bad; but the mere fact of their existence is not conclusive evidence that all are bad, nor does the statement of an authority to the effect that cast aluminum can be made strong enough for the purpose make them good. It simply shows that there are a great many poor specimens extant, and probably many more are being turned out; in short, that there is a vast deal of room for improvement, and that some engineers should seek this in the employment of other materials offering equal advantages, is not in itself particularly strange.

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Importance of Steering Gear Construction. If daily newspaper reports correctly reflect the situation, defective steering gears must be held responsible for an appalling list of fatalities. One day's gleaning brings to light no less than four accidents in widely separated parts of the country. All four appeared in the same issue of a New York daily, and every one of them was attributed to a faulty steering gear—three directly and the fourth by inference. Two of the accidents were attended by fatalities and the others by severe injuries, and doubtless the average man can recall scores of similar reports during the past few years in which the accidents have, almost without exception, had gruesome terminations.

Before accepting such reports at their face value it must be remembered that the average daily newspaper reporter's first duty is to make a story, and that his narrative may be built upon an extremely meagre foundation of fact does not cause him any twinges of conscience. Ever since electric lighting has become general it has been a common practise to report mysterious fires as being due to defective insulation, frequently where there was no wiring at all in the place. In the same way, many an automobile accident is attributed to a faulty steering gear, and though a large proportion of such reports may be unwarranted, there is every reason to believe that the majority of them are founded on fact. The showing is one that should rouse both the manufacturer and the autoist to a keener sense of the responsibility placed upon this essential. The former to spare no expense or pains to see that it is made as nearly infallible as any device of human creation well can be, and the latter to see that care on his part contributes as much as possible to keeping it in that condition of continued efficiency that is vital to safety.

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Society of Automobile Engineers Answers the Need. If there were ever an instance in which that saying of the press agent about filling a long-felt want was justified, it is to be found in its application to the gap in the engineering side of the automobile industry that has been so well occupied by the organization of the Society of Automobile Engineers. Early in its history every industry feels the need of organization and co-operative effort, particularly as applied to the technical development of its product, and in no other has this been such an imperative need as in the making of automobiles, for very obvious reasons. It was recognized by the engineers themselves from the very beginning, but it was some time before any attempt at a remedy was made, and then it merely resulted in benefiting those connected with a part of the industry.

What has been needed all along was an organization open to the automobile engineer regardless of industrial affiliations, and this need has been well supplied by the organization of the Society of Automobile Engineers. The latter has been successful since its very inception and, though but in its second year at the present writing, is in an unusally flourishing condition. The fact that its membership is composed of engineers from every branch of the industry, and includes many of the most prominent from the different divisions into which the American industry is separated, speaks for itself. Despite its youthfulness, it has already done good work and merits the hearty support of the industry as a whole, for its possibilities of development are unbounded.

THAT NEW YORK CITY ORDINANCE.

In New York City, hereafter, it seems the maximum penalty incurred by a violation of the automobile speed laws cannot exceed a fine of $10. The State law makes such a violation a misdemeanor, but it also grants a general power to the municipality of New York to pass its own ordinances on the subject, and this the Board of Aldermen has done, reducing the penalty from an allowable maximum of a $250 fine, with imprisonment for repeated offenses, to $10.

William Heiner was arrested on June 1 last for speeding and held for the Court of Special Sessions for trial under the provisions of the State law, known as the Motor Vehicle law. His attorneys, Flammer & Flammer, sued out a writ of habeas corpus, contending that the passage of the ordinance by the Board of Aldermen precluded the holding of a violator for trial at Special Sessions on the charge of having committed a misdemeanor, and this contention was upheld last week by Justice Truax of the Supreme Court. This means that the only punishment which can be inflicted is that provided by the city ordinance, which supersedes the State law in accordance with the provisions of the latter to that effect. Consequently Heiner could not be subjected to a fine of more than from $1 to $10.

Assistant District Attorney Taylor, for the prosecution, contended that the law of the State was paramount to any ordinance that could be enacted by the Board of Aldermen, and that that body could not pass an ordinance which would render nugatory the provisions of the general law. But in his opinion Justice Truax states that the defendant cannot be held for a misdemeanor under the State law or under the Penal Code, and is only liable to the infliction of the penalty prescribed by the city ordinance in question, as the latter was passed in conformity with power granted by the Legislature and contained in the State law.

Opinion of Counsel Niles of the A. C. A.

W. W. Niles, counsel to the Automobile Club of America, is quoted as follows in the *Herald:*

"I am inclined to think that this decision will be upheld if the case is taken to the Appellate Branch. The city ordinance was passed last November and covers all kinds of vehicles, thereby bringing it under the special provision in the State law that renders it valid.

"While there may be some differences of opinion among members of the Automobile Club, and while I do not wish to seem to express the opinion of men with whom I have not discussed the matter, it is my personal opinion that this decision is unfortunate. It leaves the maximum penalty a $10 fine, and I seriously question whether this will be sufficient to deter reckless drivers, and especially hired chauffeurs. If my fears prove well grounded the result will be more reckless driving, deeper enmity on the part of non-users toward motorists as a class, and the enactment of such drastic laws at Albany that serious hardships will be imposed on all that use automobiles. I hope my fears may prove groundless.

"At each legislative session we have difficulty in preventing unfair legislation as it is, and if the resentment of the non-using class grows we probably shall be unable to keep unfair laws off the books.

"On the other hand, the new order will be a great advantage to well meaning automobilists, who have been imposed on by unfair arrests. The Automobile Club stands for a pretty stiff law. It has complained, not about the severity of the State law, but of the unfair and often unintelligent manner in which it sometimes has been administered."

Judge of General Sessions Court on Ordinance.

Judge Charles S. Whitman, of the General Sessions Court, said:

"I am afraid that Judge Truax's decision is sound law. I say 'afraid' because it will cause a condition which will be bad for the public that does not ride in motor cars and which at the same time will react on the conservative and law-abiding motorists. A $10 fine, the greatest penalty now imposable, is a joke to the man wealthy enough to own an automobile. If reckless and inconsiderate driving results, it will mean a change in the State law and the imposition of penalties heavier than were ever in force here. It must be remembered that the legislators from the country districts are not over fond of the automobilist, anyway.

"If there is any marked increase in reckless driving it will be found among the paid chauffeurs. In my four years' experience on a magistrate's bench I observed that in a majority of cases violations were committed when the owner was not in the car."

Comment of Chairman Terry, A. A. A. Legislative Board.

Chairman Charles Thaddeus Terry, chairman of the A. A. A. Legislative Board, comments as follows upon the matter:

"The decision of Justice Truax would not, under any circumstance, indicate any necessity for a more drastic state law. The fault, if fault there was, lies with the ordinance adopted by the Board of Aldermen and not with the State law. Under the State law, section 6, subdivision 1, the Board of Aldermen could have provided in its ordinance that the same penalties provided in the State law could be inflicted for a violation of the ordinance; and if the Board of Aldermen in enacting its ordinance had said nothing about penalties, then, under this section 6, subdivision 1, chapter 538, of the laws of 1904, the penalties provided by the State law would have applied automatically as provided in that section.

"Everyone, so far as we know, who has given any study to the question considers the present State Motor Vehicle law not only sufficiently drastic, but in many respects unreasonable and unnecessarily harsh. The fact that the Board of Aldermen, instead of re-enacting the penalties provided by the State Motor Vehicle law in its ordinance, cuts down those penalties from $250 to $10, and omitted entirely any provision of imprisonment, would reasonably indicate that the Board of Aldermen consider the penalties provided in the present State automobile law as altogether too harsh and severe; otherwise there would have been no reason why the Board of Aldermen should not, in the ordinance enacted by it, have provided for the penalties as they stand at present in the State law, because under that State law the Board of Aldermen have sole power to re-enact those penalties."

Despite the decision of Judge Traux, Special Sessions Judge Flammer, in Brooklyn, Monday imposed fines from $20 up on speed violators. Judge Flammer announced that, unless the Appellate Division overrules him, he sees no reason why he should not continue imposing heavy fines. He points out in his decision that the laws of 1904, while taking away from cities the right to pass ordinances fixing the speed limit, say nothing about prosecutions for violating the State speed law. The statutes do not take away from the city the right to fix the amount of fines, nor do they divest the State of that right; so that, as it stands, there is nothing to hinder prosecutions both by the State and the city. Cooley's Consitutional Law is quoted to show that there is no sacrifice of constitutional right if both a municipality and State punish an offender for the same crime.

AUTO INSURANCE LIMITED TO CASUALTY CO'S.

ALBANY, N. Y., August 12.—Under an amendment to the insurance law made this year, the Insurance Department has questioned the right of marine insurance companies to write automobile collision risks, and at the request of the companies affected the question was recently referred to Attorney-General Jackson for settlement, who has just decided in the negative. The latter's ruling, which was made public by Superintendent of Insurance Kelsey last week, is as follows:

My interpretation of the amendatory provisions of Chapter 206, laws of 1907, is not in accord with the contention of the counsel of the companies interested, and I quite agree with the position taken by your department, that it was not the intention of the Legislature to confer authority to issue policies against collision hazards in the use of automobiles, upon corporations authorized to transact business under the provisions of Articles III and IV of the insurance law.

KENTUCKY TO HAVE A. A. A. STATE BODY.

LEXINGTON, KY., Aug. 12.—The formation of the Blue Grass Motor Club, with a membership of fifty and indications of twice that number inside of thirty days, will now make it possible for Kentucky automobilists to perfect a State organization of the A. A. A. The Louisville Automobile Club became a member of the A. A. A. some time ago, and the Paducah Automobile Club is ready to join with the Louisville Club and the newly organized Blue Grass Club in the completion of the Kentucky State Automobile Association.

The Blue Grass Club contains members not only in Lexington, but in neighboring places, and besides electing F. R. Toewater as president, vice-presidents were designated as follows: G. A. Roy, Nicholasville; W. H. Walcott, Winchester; Hunter Brothers, Versailles; Dr. F. F. Bryan, Georgetown; Charles Cecil, Danville; John W. Williams, Mt. Sterling; George Clay, Paris, and W. E. Sims, Midway. Dr. George D. Kelly, of Lexington, was elected treasurer, and E. H. Alexander secretary. The first work to be undertaken by the club will be that of posting danger signals in the vicinity. The executive committee of the club consists of Dr. Julian McClymonds, Dr. H. H. Roberts, and J. W. McCormick. S. J. Roberts, editor of the Lexington *Leader*, and Desha Breckinridge, editor of the Lexington *Herald*, were elected honorary members, and it is expected the same course will be pursued with regard to the editors of other papers in Central Kentucky. The club will hold a smoker August 21.

GALVESTON'S SEAWALL NOW A SPEEDWAY.

GALVESTON, TEX., Aug. 10.—Under the Texas automobile law the various municipalities are empowered to make their own restrictions on automobile speeding, and Galveston has just taken advantage of this privilege. "We have succeeded in securing very satisfactory legislation from the city," says Moritz O. Kopperl, president of the Galveston Automobile Club. "The State law permits a uniform speed of eighteen miles, while the city ordinance has defined a certain territory in the business section wherein the speed is restricted to ten miles an hour. On the other hand, the city has exempted from all speed limits, as allowed under the State law for speedways, the boulevard on top of the seawall as far as laid, with the exception of about three blocks in front of the baths and Electric Park, which portion is usually very crowded, both with vehicles and foot traffic. The beach being a speedway, is also exempted under both the State and city laws. In the suburban districts of the city a speed of fifteen miles an hour is allowed." Galveston is the first city in the country to give the autoist any such leeway as this and the outcome of the experiment will be watched with interest by autoists, as it is feared advantage will be taken of the privilege.

WORCESTER DOESN'T LIKE RE-REGISTRATION.

WORCESTER, MASS., Aug. 12.—Secretary James Fortescue, of the Massachusetts Automobile Association, has notified the Worcester Automobile Club that it would be inconsistent with the position taken by the State Association before the Legislative Committee on Taxation for the association to attempt to test the constitutionality of the new State re-registration law. At a meeting of the Worcester club held last month it was voted to request the State Association to have the constitutionality of the law tested, and despite Secretary Fortescue's letter the club secretary has been directed to collect data covering the matter at issue, so as to be in a position to decide what to do in the future. Most of the members of the club have paid their re-registration fees under protest.

At the recent meeting of the club the by-laws were amended, doing away with the regular monthly meetings. The annual meeting in May is retained, and during the rest of the year the Board of Governors will handle the club business, except at special meetings called on occasions out of the ordinary routine.

FIFTY-THREE STARTERS FOR BRESCIA RACES.

MILAN, August 2.—Italy's last racing event of the season, to be contested on the Brescia circuit, September 1 and 2, has united a total of 53 entries. Thirty-nine of these are in the race to be run under German Emperor rules for the Florio Cup and 14 will compete in the speed test under the Grand Prix formula. Entrants are, for the Florio Cup, 3 Spa, 3 Itala, 3 Isotta-Fraschini, 3 Bianchi, 3 De Luca Daimler (Italian Daimler), 3 Rapid, 3 Benz, 3 Brixia Zust, 3 Suddeutsche Fabrik, 3 Wolsit (Italian Wolseley), 2 Rochet Schneider, 3 Junior, 1 Eisenbach, 1 Aries, 2 Darracq. For the race under French rules the starters are 3 Bayard-Clement, 1 Diatto-Clement (Italian Bayard-Clement), 1 Darracq, 3 S. P. A., 3 Itala, 3 Dietrich. Fiat, winner of the two previous races under these rules, has decided not to compete on the Brescia circuit. Renault, who came second in the Grand Prix, will not start, neither will the Brasier team. It will be noticed that Italy has a preponderance of entrants.

The technical committee of the Automobile Club of France has offered a gold medal, to become the property of the constructor whose car, traveling at not less than sixty-two miles an hour, shall have the lowest fuel consumption in the Brescia race.

DE DION STILL ASKING FOR AUTODROME.

Marquis De Dion, vice-president of the Automobile Club of France, head of the De Dion-Bouton factory, near Paris, though still professedly in arms against automobile racing, appears to have taken the sting out of his blows. Speaking to a *Herald* representative, he declared that next year he hopes to organize another race for touring machines with a limited gasoline supply on the Lisieux circuit, cutting out the eliminating touring event on unprotected roads, on account of the unreasonableness of many drivers.

According to the Marquis, the autodrome is bound to come. By autodrome he does not mean tracks such as are found in America or at Brooklands, in England; but a course fifty kilometers in circumference, over the hills and valleys of Auvergne, where, on perfect road surfaces, the automobilist will find every class of country likely to be encountered by the average tourist in a run through Europe.

AUTOS SIXTH IN FRENCH NATIONAL EXPORTS.

PARIS, August 5.—Less than seven years ago the automobile industry of France occupied forty-fourth position in the list of exports. This year, according to official returns, it figures sixth on the list, with $16,800,000 exports for automobiles and cycles during the first half of 1907, and $2,600,000 for tires during the same period. French exports surpassing the automobile in importance are:

Silk tissues	$36,600,000
Wool	32,800,000
Cotton tissues	30,800,000
Woolen tissues	23,800,000
Wines	21,400,000
Automobiles and tires	19,400,000

RENAULT TO TRY CHICAGO NEW YORK RECORD.

An attempt on the Chicago-New York automobile record is in contemplation by Paul Lacroix, selling agent of Renault Freres. With a 35-45-horsepower 1907 model Renault runabout, it is intended to leave Chicago some time next week and endeavor to clip a few hours off the existing record for runs between the two cities. Additional interest attaches to the event from the fact that this is the first occasion on which a French car has attempted a record over this route. This week Paul Lacroix covered the distance from Chicago to New York to familiarize himself with the roads and make arrangements. The trip was done on a 1905 car and, though there are many places where road conditions made speeding impossible, Mr. Lacroix is confident that he can do things to the record.

RICHMOND ENTHUSES OVER AUTO RACING.

RICHMOND, VA., August 12.—For the first time in its history this city has been treated to an automobile race meet, and to say that it took things by storm is to put it mildly. The meet was held under the auspices of the Richmond Automobile Club, and met with such success that it has been decided to hold another in September.

The only incident to mar the day's sport occurred in the free-for-all, when Howard E. Van Lear, driving a Ford, skidded on the back turn and went through the fence, receiving sundry bruises and cuts, but no serious injuries. Of the 1,600 or more spectators at the track, it was figured that two out of every three were physicians, so there was no lack of medical attendance. Van Lear was simply surrounded by a flock of doctors, but one wit observed that two of the M.D.'s made no attempt "to get in the game" and asked why. "Well," said one of them, "you see, the machine turned over twice and did not kill Van Lear, so we think it but fair to give him a chance."

The first event was a five-mile race for stripped runabouts, and was taken handily by Ford No. 1 in 6:48, with Ford No. 7 second in 6:55. A Buick, Maxwell and Cadillac were the other entrants, and the first named, with Coddington up, was a good third.

This was followed by another five-mile event, in which there were only two entrants—a 30-horsepower Autocar, driven by L. H. Foster, and a White steamer. According to the scribe of one of the dailies here Foster had bad luck. "On account of the gasoline in the car being 86 test," said the reporter, "the machine got hot and the plug burned out on two occasions, making it impossible for the big red car to win." The White steamer completed the distance in 8 minutes.

There were only two entries in the third race also, cars listed at $2,000 and under. A 12-horsepower Franklin and a 22-horsepower Buick faced the starter, and the former won in the second best time of the day, making the five miles in 8:01.

Following this came a doctor's race at two miles, which was taken by Dr. Stuart MacLean in his 12-horsepower Franklin, in the good time of 3:40, Dr. Moses Hoge being second in a 20-horsepower Maxwell, 12 seconds later.

The most exciting event of the day was the free-for-all, in which C. C. Coddington, driving a 22-horsepower Buick, walked away from his field, making the five miles in 7:12.

THE RETIREMENT(?) OF BARNEY OLDFIELD.

MINNEAPOLIS, MINN., Aug. 12.—Barney Oldfield, dare devil, etc., in an interview says that he is going to retire from racing and follow the more quiet pursuit of selling cars. "I'm going to quit," he said. "It's on the square with me, and I ain't making farewell towers either. Now, I'm a professional," confessed Oldfield, "and I'm out for coin. Maybe I shock some of these people who think that automobile racing ought to be just a gentleman's game when I get right down to hardpan as to money matters. I've seen the auto racing game from start to finish. I was first in this country and now I'm last. The game is dying out here. It costs the manufacturers too much to build expensive racing cars and to keep them on the road. The game is better than ever in Europe now, but I won't go over there. I'm getting pretty old and this season will be my last."

ANOTHER MEMBER FOR THE A. M. C. M. A.

At the last meeting of the American Motor Car Manufacturers' Association, the Dayton Motor Car Company, Dayton, O., makers of the Stoddard-Dayton cars, were elected to membership, and will exhibit at the association's show in the Grand Central Palace, beginning on October 24.

LOVING CUP PRESENTED TO M. J. BUDLONG.

HARTFORD, CONN., Aug. 12.—On his retirement from the presidency of the Electric Vehicle Company—an office which he had held for the past four years—M. J. Budlong was presented with a token of the esteem in which his associates in the big Columbia plant held him. This took the shape of a silver loving cup, appropriately engraved, and toward the purchase of which practically every man in the shop contributed. The whole force gathered in the electric assembly department on the occasion of the presentation, at which Mr. Budlong very feelingly thanked the donors, both for the cup and the appended list of subscribers, which he said he would treasure equally as most tangible evidence of friendships during his service with the Electric Vehicle Company. His remarks were greeted with hearty applause, and as each man passed out he received a personal farewell in the shape of a hearty hand-grip from the man who had guided his destinies for the past four years. Because of his frank, open manner, his willingness to help another up the ladder and his generally manly qualities, Mr. Budlong was much admired and respected by every one in the works, who felt he had lost a personal friend.

"DIXIE" TO BE FEATURE AT JAMESTOWN RACES.

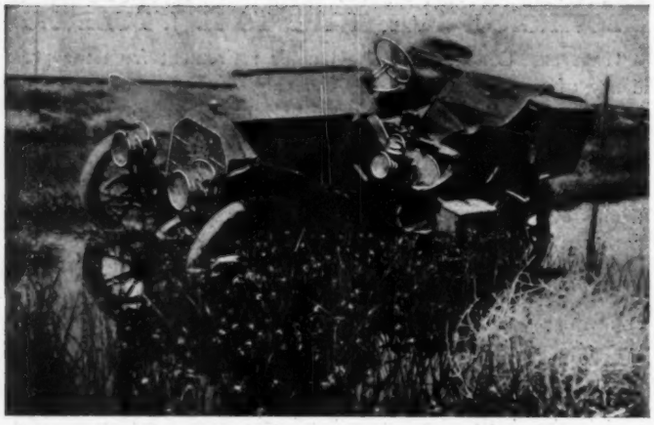
Fresh from her victory in the International British trophy race, Commodore Edward J. Schroeder's fast motor boat *Dixie* will be transferred from the steamer *Minnetonka*, on arriving in New York, and sent to the Jamestown Exhibition to compete in the races held during the week of September 4. The programme of the Jamestown races is as follows: Sept. 4, reliability trials of six hours' duration; Sept. 5, long-distance races for boats of all classes; Sept. 6, mile and kilometer speed trials for boats of all classes; Sept. 7, 9 and 10, series races, with time allowance as per rating for cabin cruising boats and open high-speed boats. On the closing night there will be an illuminated naval pageant. The cruises of the Motor Boat Club of America, leaving New York on August 20, and the American Power Boat Association, leaving on August 22, both having Jamestown as their objective point, are expected to unite fifty boats.

FIRE DESTROYS LARGE NUMBER OF CARS.

Twenty-five cars, including one owned by New York's comptroller, Herman A. Metz, and said to be valued, in the aggregate, at from $75,000 to $100,000, went up in flames with the destruction of the factory and repair shop of Mack Brothers at Atlantic avenue, near Third, Brooklyn, one night last week. The fire started in a storage shed in the rear of the factory and failure to send in an alarm promptly permitted it to gain considerable headway before the firemen arrived. Attempts were made to save the cars, but only two were gotten out. August Mack, a member of the firm, expressed it as his opinion that the fire was of incendiary origin, as threats had been made to burn the place owing to the noise at night, the factory having worked night and day for the past two months.

IMPORT FIGURES SHOW SUBSTANTIAL GAIN.

Custom house returns for the month of July past show a considerable gain in the number and value of foreign cars brought into the country as compared with the same month in 1906. In July, 1907, 115 cars or chassis of an aggregate value of $428,339.88 were imported, as compared with 106 cars of a total appraised value of $379,881.25 in the same month a year ago. For the period of six months between January and July, 1907, the figures show a falling off as compared with same months of 1906, the figures being 705 cars, valued at $2,401,310.76, and 822 cars, valued at $2,742,536.37 respectively. For 1905 the figures were 543 cars, valued at $1,992,843.79.



WORK AND MAXON'S OLDSMOBILE IN A DITCH.

ON THE OLDS TRIP TO THE PACIFIC COAST.

Two hundred miles with but three cylinders working formed the chief part of the chapter preliminary to the entrance of Fred W. Work and C. J. Maxon into Denver. They are en route to the Coast, and found the going pretty hard in Nebraska and Eastern Colorado, where the accompanying photo was taken. One of the units of the coil broke down, and, not having another to replace it, they were compelled to limp over miles and miles of plowed ground, crossing many fords, and in some instances having to get over irrigating ditches in which the water was three feet deep. Worse even than the water were the stretches of sand, which were so soft in places as to be hub deep. They spent a week in Denver before continuing.

ANOTHER LIFE-GIVING SOLUTION FOR TIRES.

GRAND RAPIDS, MICH., Aug. 5.—During the course of the history of the bicycle, and since the latter, of the automobile, there have been an endless number of compounds discovered for prolonging the life of the pneumatic tire and rendering it puncture-proof, some of them being in successful use to-day. But all of these mixtures have been intended for internal application. Now Norman Pellow, of the Michigan Lightograph Company, of Grand Rapids, has been granted patents and trademarks on a substance he terms "Rubberlife." It is said to have been given a two years' test on the rubber sheet used in lithographing, the treated sheets lasting twice as long. The compound is composed of several ingredients and is about the consistency of thick milk. Its application to the outside of a tire is said to fill the pores of the rubber, making it hard though resilient and serving to prevent the entrance of sand and water.

THOMAS FORTY IN FULL CRY ON GUADALAJARA CIRCUIT.

Interest in automobiling grows apace in Mexico and the success of the first road race held in the Spanish-speaking republic was such that others will be arranged for before long. The Thomas made a record-breaking lap, but met with an accident and was disabled.

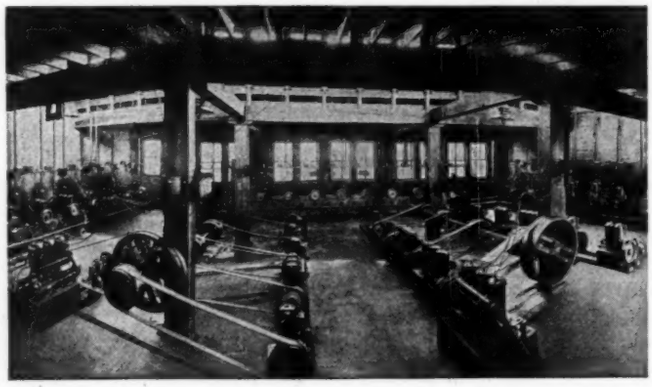
WINTON 1908 ANNOUNCEMENT SOON DUE.

CLEVELAND, O., Aug. 12.—"In about two weeks," says Chas. B. Shanks, general sales manager of the Winton Company, "we shall announce our line for 1908, and our story will be well worth reading. Mr. Winton has been at work for nearly four years on a single model intended to establish a new standard for motor car design and construction, and it is due to the fact that he has been thus concentrating his thought and effort that the Winton Company has kept out of races and contests requiring specially constructed cars.

"A few automobilists of wide reputation have seen and tried out this newest Winton creation and, if we may judge from their decision, our 1908 car is destined to be the 'exclusively best' of the year."

TESTING ENGINES ON A LARGE SCALE.

When a plant has a capacity of thirty-six marine motors a day it is quite evident that considerable in the way of facilities are required for testing them before shipment. The accompanying photograph is a panoramic view of the testing room of the Ferro Machine & Foundry Company, Cleveland, O., which forms a building by itself. The view shows no less than fifty motors



TESTING ROOM OF THE FERRO MACHINE & FOUNDRY COMPANY.

being tested out simultaneously, the motors in the center being run from the power generated by two three-cylinder, 25-horsepower Ferro engines shown in the foreground. The lines of engines around the wall are being tested out under their own power. In addition to building complete engines, the company is one of the largest founders of automobile cylinder castings in the country.

FARM UTILITY OF AN AIR-COOLED CAR.

E. A. Blackshere, who owns a large stock farm near Baltimore, Md., contributes a novel bit of evidence of the utility of automobiles in general and on the "cooling" question in particular. Mr. Blackshere used his car (a Marmon air-cooled runabout) following the workmen in his field during the harvest in July. The motor was run ten hours a day, with one hour's stop for dinner, for five and a half days. The field had grades of 30 per cent. and soft soil, so that the car was never off the low gear for five hours of continuous running each half day. The engine showed no signs of overheating. The thermometer stood about 90 degrees. On leaving the field after five hours' running on the low gear, the car took an 18 per cent. grade on ordinary farm road, twice per day, on the high gear.

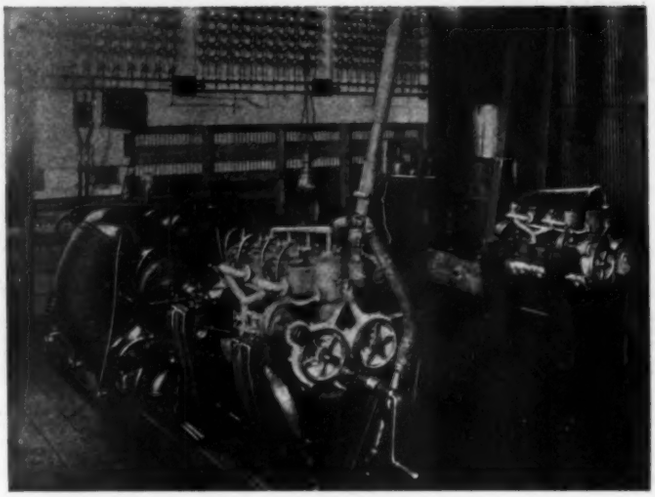
Galveston to Have New Garage.—Thomas B. Scott and Gustave B. Koehler have organized the Galveston Motor Car Company, which has acquired the Seixas building, and will thoroughly remodel it as an up-to-date garage.

HOW PREMIER MOTORS ARE TESTED.

Probably by far the most interesting department of any automobile factory to the layman is what is known as the testing room. Of course, he is interested in being shown the many and varied processes through which the many different kinds of material and the numerous different parts that go to make up a motor have to go through before they reach the end of their goal in the assembling department, and are for the first time brought together in the shape of the complete unit. He is interested, no doubt, but his interest is of a more or less academic nature because to a great extent all machinery looks more or less alike to the unfamiliar eye. It can discern the difference between a lathe and a drill press because one happens to operate horizontally and the other vertically, but apart from such pronounced distinctions as are apparent between two such pieces of machinery as those mentioned, all means little more or less than a slightly different arrangement of gear wheels, cams and levers, the purposes of which are mysterious, to say the least. Truth to tell, he never realized that any of the parts of a motor had to go through such a seemingly endless round of processes and operations before being complete and undertaking its first journey out of the hands of the machinists to the inspection department, and then, if passed, to the assembly department, via the stock room, but most automobile factories work on such a schedule and such a pressure that there is hardly any necessity for this intermediary.

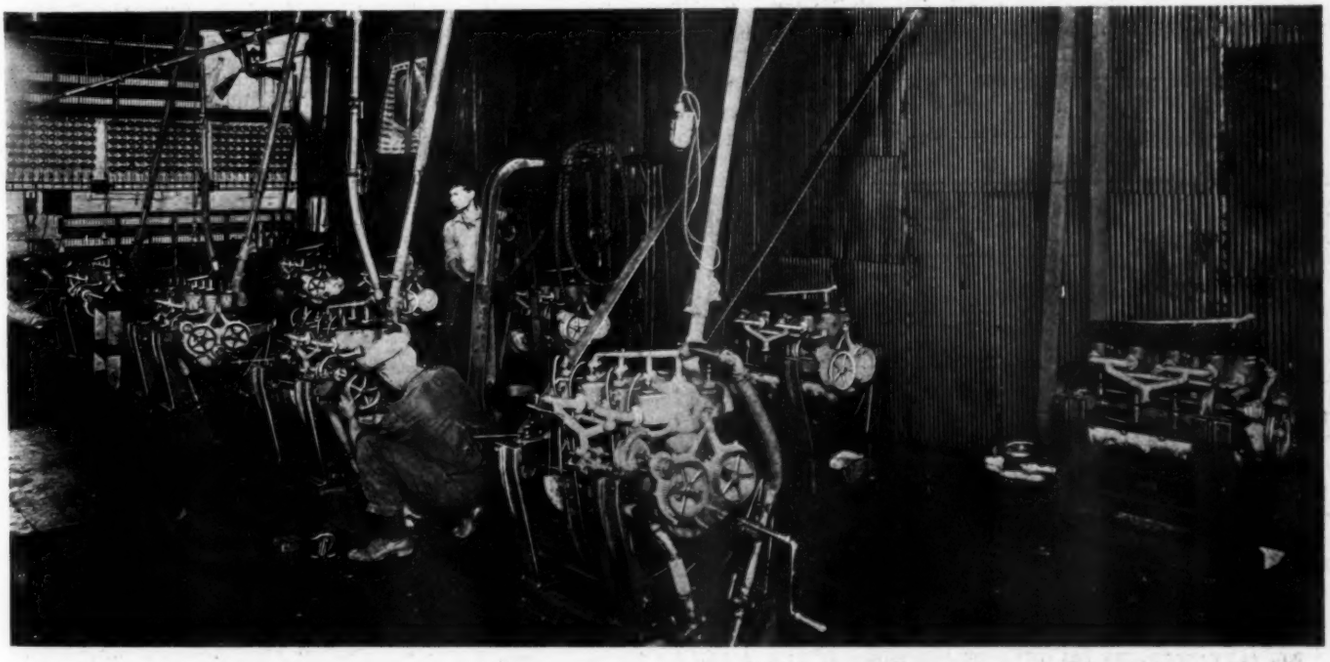
So it is that not until he reaches the testing department does the layman finds himself on familiar ground again. Here are the complete motors, anywhere from two or three to a dozen or more, all working away at a great rate, so that it is little wonder that he finds it far and away the most interesting part of the plant. The photographs show what is probably a typical department of this kind—that of the Premier Motor Car Company at Indianapolis, Ind.

This is the last step in the motor's progress through the factory; here the complete motor comes from the assembling department. Prior to actually being tested, it must be run in or "lapped" and this forms no part of the operation of testing, sometimes being carried out in the manufacturing department and at others in the testing room. It consists of turning the motor over slowly by belt in a flood of oil so that the moving parts will accommodate themselves to one another. This finished, the motor then goes to the test block, where it is connected up and run under its own power for the first time. This

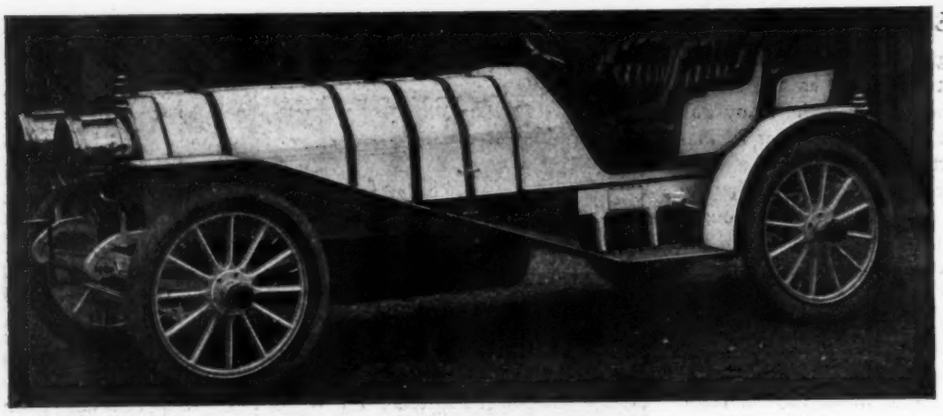


CLOSE VIEW OF GENERATOR AND LAMP RHEOSTAT.

is the preliminary test, and throughout its duration the timing of the valves and timer and the efficiency of all its connections are thoroughly inspected. It is then transferred to another block on which it is direct-connected to a dynamo, so that its power output may be measured, a close view of this operation being shown in the smaller picture. The current from the generator is led through various banks of lamps, so that the load may be increased or diminished at will and the output of the motor under both varying and constant load conditions determined. During this test, the working of all its accessories is carefully inspected and adjustments of valves, timer and carbureter made to bring it to the highest pitch of efficiency. Before this it was but an assemblage of parts; now it is a smooth-running unit, each part of which works in consonance with the rest. It is now an individual and has assumed a character. The next step is to incorporate it in a chassis and here again it undergoes a thorough inspection and trying out in connection with the other parts of the car. During the course of all its tests it is in the hands of the most experienced and thoroughly capable men connected wtih the plant and nothing is left undone to make it a perfect and smooth working piece of machinery.



WHERE THE PREMIER MOTORS RECEIVE THEIR FINAL TESTING OUT BEFORE MOUNTING ON CHASSIS.



SIX-CYLINDER, 75-HORSEPOWER, TWO-CYCLE GEARLESS GREYHOUND ROADSTER.

GEARLESS GREYHOUND MAKES ITS DEBUT.

Though few of the models for 1908 which have already made their appearance are more striking than the aptly-named Gearless Greyhound, made by the Gearless Transmission Company, Rochester, N. Y., probably the first item in the specifications of the new roadster to call for remark, is the fact that there are practically two independent sources of fuel supply, the so-called reserve tank of seventeen gallons, holding as much as is ordinarily carried on many cars as the main supply. Another striking feature is to be found in the advantage that has been taken of the long wheelbase and single seat of the car to provide a double hood with the motor under one and the gear set under the second, so that either of these essentials is very accessible. The power plant consists of a 75-horsepower, six-cylinder, two-cycle engine, fitted with two independent systems of ignition, one of which consists of a Bosch high-tension magneto. The equipment includes a full set of lamps, as shown, as well as a detachable trunk under the rumble seat.

AL. POOLE WASN'T ABOARD THE SIMPLEX.

Al. Poole, well known as a companion to Joe Tracy in Vanderbilt Cup races, did not have a chance to drive the 35-horsepower Simplex in the recent Fort George hill climb. It seems that Watson and Stark, two testers from the factory, were the ones on the car in the accident which preceded the climb. Poole had not taken his place at the wheel, and the reports involving him in the mishap were erroneous. Possessing the excellent reputation of a skillful though fearless driver, Poole does not like to be held responsible for the careless driving of others, and therefore protests at being held in any way responsible.

BOB ALEXANDER TESTING OUT POPE-HARTFORD AT EIGH SPEED.

EDITOR SOLVES SITUATION.

H. L. Humphreys is the automobile editor of the New York *Evening Post*, one of the most conservative papers of the country. The gossipy material such as finds its way into print in some of the daily papers, in reference to the notables of the automobile trade, is not considered available in the columns of the sedate *Post*. Mr. Humphreys has met the emergency by bringing out an occasional publication called "The Missing Spark," and in its columns he does the jollying act lavishly and thoroughly, and, of course, supplies extra copies to his advertisers and others whom he wants to have advertise. By this method Humphreys hopes to hold his own against Wetmore of the *Mail*, Morgan of the *Globe* and Curry of the *American*, all three of whom get their "stuff" into print exactly as they write it.

LOGAN MODEL S TRUCK TESTING OUT WITH 7,169 POUND LOAD.

This truck is the newest Logan model for the 1908 market. It will have a rated capacity of three tons, but is tested out with about a twenty-one per cent. heavier load. The makers, the Logan Construction Company, Chillicothe, O., state that it will be a revelation to users of commercial cars.

ANOTHER NEW BATTERY DISCOVERED.

MILWAUKEE, WIS., Aug. 12.—Frank C. Curtis, of Milwaukee, is the inventor of the latest new type of storage battery that is going to revolutionize things generally and incidentally put the Standard Oil Company out of business, according to the newspaper reports of his discovery. The latter consists of new alloys for the electrodes, as well as a new solution for the electrolyte. In line with the usual newspaper accounts that have characterized similar discoveries in the past few years, it is said to be possible to carry sufficient chemicals under the seat of a car to run it thousands of miles. Fred D. Underwood, president of the Erie Railroad Company; F. C. Rice, superintendent of the Pullman Palace Car Company; A. W. Trenholm, manager of the Omaha road, and other similarly prominent men, are said to be interested in the invention.

HOW A MAN VISITS "HOME" NOWADAYS.

WILMINGTON, DEL., Aug. 12.—L. H. Green, a prominent resident of New York, came to Delaware a few days ago in his automobile to visit the scenes of his boyhood, near Talleyville. He was accompanied by Mrs. Green and also John P. Green, of Philadelphia. They spent the day touring the section and calling upon Mr. Green's boyhood friends, some of whom he had not seen for many years.

FUEL CONSUMPTION IN THE A. A. A. TOUR.

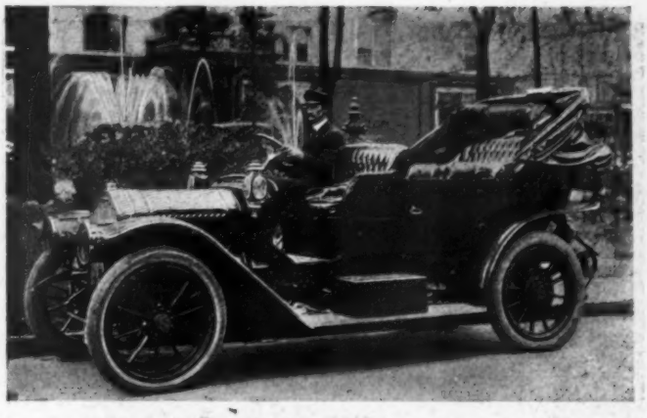
In the hurry and bustle attendant on making controls, not to mention the endless details which the drivers had to attend to, it is hardly strange that few of them ever thought of keeping any individual statistics of the performance of his car. This was not the case with Charles Burman, who drove the number 49 Peerless throughout the tour, and the figures he collected are of considerable interest, particularly those relating to the fuel consumption of the car, which totaled 120 gallons for 1,583.4 miles, or an average of 13.19 miles to the gallon—an unusually favorable showing in view of the nature of the going. The mileage stated seems to have been the actual total distance of the tour, as Mr. Burman's machine made no detours at any time, going directly from one control to the next. The time consumed by the car was 83 hours 55 minutes, although the schedule for the twelve days' running allowed 97 hours. Out of this total running time there was lost for minor adjustments 54 minutes, and for various other reasons, such as tire repairs, fuel supply, putting on chains and enforced stops in order not to pass the pacemaker, 1:43, giving a net running time of 81 hours, 18 minutes. Four passengers were carried through the tour, and, figuring the cost of the fuel at 20 cents per gallon, the expense per mile per passenger for the entire trip was $0.00379.

SUPPLY DEALERS TO OBSERVE SUNDAY CLOSING.

As the result of a complaint brought by the Sabbath committee of the Bible House, C. W. LeClear, manager of the Da-An-Nite Supply Company on upper Broadway, was summoned to appear before Magistrate Corrigan in the West Side Court on Thursday morning last to answer to a charge of having sold automobile supplies on Sunday in violation of the closing law. He was found guilty and the magistrate, in suspending sentence, took occasion to warn New York's supply houses against opening on Sunday. Later a formal warning to the same effect was sent out by the Police Department to all the supply dealers along the "row," stating that the law would be enforced. This does not affect obtaining supplies of oil and gasoline by cars regularly stored in garages.

LOGANSPORT TO HAVE ANOTHER GARAGE.

LOGANSPORT, IND., July 29.—Harry Case has sold out his interest in the Fifth street garage to Arthur and Herbert Dunn, who have leased the ground floor of the adjoining building and will double the facilities of the place, besides purchasing additional cars, to be employed in an auto livery service. Mr. Case will continue as the representative of several well-known American cars in this city and adjacent territory.



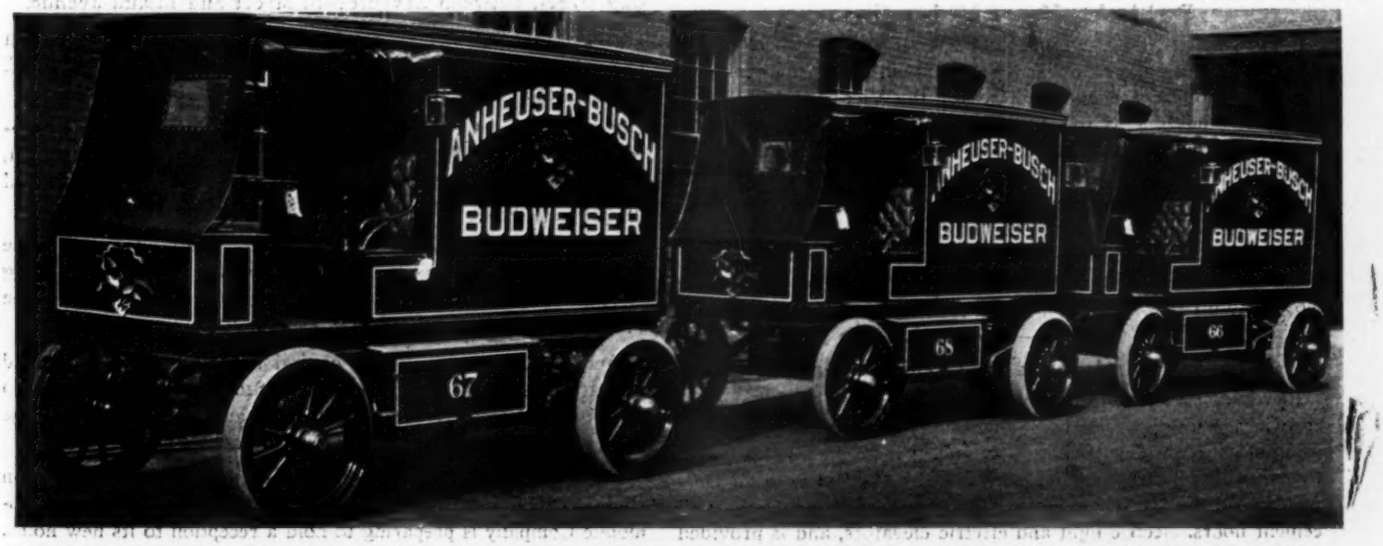
VICE-PRESIDENT FAIRBANKS' NEW DE LUXE CAR.

Warren Fairbanks, his son, who is seated in the tonneau, with Mrs. Fairbanks recently drove the car from Chicago to Boston, to attend the reunion of the Fairbanks family, which was held near the latter city.

LARGE ORDER FOR POPE-WAVERLEY ELECTRICS.

No better instance of the manner in which the electric vehicle is gaining ground in the commercial field could possibly be cited than the recent order placed with the Waverley department of the Pope Motor Car Company, Indianapolis, Ind. The Anheuser-Busch Brewing Association, of St. Louis, has long been noted for its modern methods in every department, and its managers were induced to investigate the advantages of electric delivery with the result that an order was immediately placed for fifteen Pope-Waverley electric trucks. Probably the highest compliment that could be paid them was that contained in the few words expressed by Augustus Busch, the vice-president of the association, when he saw the vehicles. "Those are trucks," he said.

In fact, they were considered so attractive and such an effective piece of advertising that only thirteen were placed in service in St. Louis while the remaining two were sent to Jamestown as part of the firm's exhibit there. While the vehicles are really light trucks, they are fitted with a special type of enclosed delivery body having rear doors. The motive power consists of 42 cells of 15 plates each, delivering current to two 80-volt motors hung from the chassis and driving to a countershaft through a double reduction; from the countershaft a chain drive is taken to the rear wheels. This power plant has proved itself capable of the most exacting demands of a quick delivery service in and around St. Louis. The wheels are 36 inches in diameter and are fitted with solid tires, 4 inches front and 5 inches rear.



THREE OF THE FIFTEEN POPE-WAVERLEY TRUCKS RECENTLY SUPPLIED THE ANHEUSER-BUSCH BREWING ASSOCIATION, OF ST. LOUIS.

SPACIOUS NEW GARAGE AT PORTSMOUTH, N. H.

THE EVER-INCREASING GARAGE LIST.

Modern Automobile Garage Secured by Portsmouth.

PORTSMOUTH, N. H., Aug. 12.—A spacious fireproof automobile garage, with a frontage on Fleet street of 90 feet and a depth on Porter street of 112 feet, was recently opened here. The building, which is one story high and 17 feet in height, is entirely of steel, brick, concrete and glass. The last named enters largely into its composition, for, besides being extensively used in windows and doors, there are about 50 square feet in two skylights in the roof. The gasoline supply is conveyed into the building through pipes leading from two cylindrical tanks, each of 300 gallons capacity, which, to guard against accidental explosion, have been placed underground outside the wall in the rear. The garage is lighted by electricity.

Street Car Barn to Give Way for Garage.

WHEELING, W. VA., Aug. 12.—R. J. McCullogh, who has long been identified with the automobile business here, is now having built a modern garage on the corner of Sixteenth and Eoff streets —the site of the old street car barn that has so long been an eyesore to the population of Wheeling. Jason C. Stamp is said to be associated with Mr. McCullogh in the enterprise, which, when finished, will be one of the finest establishments of the kind in the State. The building is centrally located and will have a frontage of 100 feet on Sixteenth street and 70 feet on Eoff, providing accommodation for fifty large cars, in addition to a completely equipped repair shop, which will be kept open night and day.

Rockford to Have a Modern Garage.

ROCKFORD, ILL., Aug. 12.—Ground has already been broken for the construction of a modern garage building for Robert A. Smythe, who has the agency here for the Pierce and Maxwell cars. The building is to have a frontage of 70 feet on Eighteenth street and a depth of 35 feet, the façade being of pressed brick with vitrified brick trimming. It will be two stories high and the main floor will provide accommodation for about 25 cars, beside which complete repair facilities will be installed. Mr. Smythe has been handling cars here for the past six years and is at present located at 225 Eighteenth street, but expects to move into his new building about September 1.

Up-to-date Auto Station Opens in Reading.

READING, PA., Aug. 12.—The garage of the Berks Automobile and Garage Company, which is one of the best equipped plants of its kind in Pennsylvania, is now in full swing. The building is a two-story brick structure, measuring 40 by 131 feet with an L 60 feet in depth. It is of modern construction throughout, with cement floors, electric light and electric elevators, and is provided with every facility both for the handling of cars and the convenience of the customers of the establishment. For the benefit of the latter a large waiting and show room, finished in Mission, has been fitted up on the first floor, as well as baths for both men and women. The garage proper has accommodation for fifty large cars, in addition to which a most complete machine and repair shop has been installed. The firm handles the Jackson, Maxwell and Stoddard-Dayton cars in this territory, and also does a renting business.

Columbus Garage Quietly Changes Hands.

COLUMBUS, O., Aug. 12.—S. Evans Hodge and C. R. Clough have organized the Southern Garage Company to take over the plant and business of the Imperial Garage Company, at 35 West Mound street, which recently made an assignment to C. H. Davis. The latter has been lifted, and the company will refit the establishment, improving its facilities, besides adding a complete line of automobile supplies and accessories.

Ashland Garages Now Combined in One.

ASHLAND, O., Aug. 12.—E. C. Overs, who conducted a garage on Second street for some time past, has sold out his establishment to Burt Richards, who has the agency for the Jackson and Ford cars here. With this increase in his facilities Mr. Richards has as complete an automobile station as is to be found in any of the smaller towns of the State.

NOTES OF THE GARAGES.

Bangor, Me.—Treat & Nash have recently installed at their garage, on Palm street, a charging plant for storage batteries, as well as a tire vulcanizer.

San Antonio, Tex.—The American Automobile Company will open a new and up-to-date garage on Losoya street towards the end of May.

Washington, D. C.—The Washington Garage Company has been incorporated with a capital stock of $150,000, comprising 1,500 shares of the par value of $100 each.

Gettysburg, Pa.—George F. Eberhart, proprietor of the Gettysburg Motor Car Company, is making extensive improvements in his garage on South Washington street.

Coldwater, Mich.—W. S. Farrand is building a garage 50 by 70 feet. Construction is concrete throughout, with iron trusses and no center posts. There will be a first-class repair shop.

Columbus, O.—Plans have been completed for the erection of a modern garage by O. G. Roberts & Company on East Gay street, between Seventeenth street and Miami avenue.

Massillon, O.—An automobile garage is being erected in Oak street, just to the rear of the Segner block, by E. C. Segner, who hopes to have the place ready shortly.

Youngstown, O.—A first-class automobile garage and clubroom will soon be opened by John Euwer and Powers Smith, who are taking over the agencies and business of E. Hippard in North Phelps street.

Fargo, N. D.—John Hass will erect a one-story automobile garage on Second avenue North, with foundations strong enough for a three-story structure to be put up later. The premises will be occupied by Hector Barnes.

Owensboro, Ky.—With a capital stock of $10,000, divided into 100 shares of the face value of $100 each, the Owensboro Automobile Company has been formed and has secured a large garage at the corner of Fourth and Frederica streets.

Milwaukee, Wis.—Now established in its new garage on Eighth street, just south of Grand avenue, the McDuffee Automobile Company is preparing to hold a reception to its new home. The garage, one of the finest in the city, holds seventy-five cars.

BRIEF ITEMS OF NEWS AND TRADE MISCELLANY

Kenosha, Wis., is soon to have another automobile factory, the Orr Motor Car Company, which was recently organized with $25,000 capital, having decided to establish its plant there.

The Connecticut Telephone and Electric Company state that at the Atlantic City meet, August 5-7, cars equipped with Connecticut coils secured the greatest number of events, having won fifteen firsts, nine seconds and six third places.

Additions to the plant of the Royal Motor Car Company, Cleveland, O., which are being rushed to completion by the contractors at the new site on East Seventy-second street, near the L. S. & M. S. Ry., are expected to be ready for occupation by September 1.

The Holsman Automobile Company, of Chicago, has moved its offices from the sixth floor of the Monadnock block to the fourth floor of that building, where the entire end of the building has been secured, giving the company more than double its former floor space.

The Logan Construction Company of Chillicothe, O., maker of the Logan "Blue Streak" semi-racer runabout, is elated over the selection of the board of public safety of Akron, which has ordered for the use of Chief T. Mertz, of the fire department, one of the Logan runabouts. A half dozen concerns sought to have their cars selected.

Interest attaches to the report of the incorporation of the New York & Philadelphia Automobile Company, recently organized under the laws of the State of New York, with a capital of $25,000. The purpose is to deal in automobiles, and the incorporators are J. W. Spalding and William T. Brown, of 126 Nassau street, New York City, and James M. Carrington, of Long Island City, N. Y.

California is to have another automobile factory, which will be located at San Diego. Full particulars regarding the new establishment are lacking, but it is understood that local capitalists are backing it for the purpose of developing a new invention in the automobile line. It is said that $15,000 worth of machinery has already been ordered, and when running the plant will employ between 100 and 200 men.

That the expense of automobile travel is very much overrated is amply shown by the experience of D. E. Levy, a New York broker, who recently drove his Matheson from New York to Chicago and return with a party of five. The chief items of the account are: fuel, $51.39; oil, $12.40; storage, $13; washing, $12; polishing, $4.25, and kerosene, .75, making a total of $93.79. This figures out at the rate of three cents a mile for the entire party, or five mills per mile per passenger.

The authorized capital stock of the Hartford Auto Parts Company, a Connecticut corporation, has just been increased from $10,000 to $35,000. The company was organized early in 1906, at Hartford, to manufacture a line of automobile parts, but its facilities thus far have only permitted the manufacture of a special type of universal joint, known as the "Hartford," which is distinguished by the use of hardened ball and socket bearings and a new form of all-metal casing. The increase in capital is to provide additional facilities in the machinery and special tool equipment of the factory at Hartford, Conn.

It is announced that the show committee of the Importers' Automobile Salon has settled upon the style of decorations and general plans for the arrangement of the importers' show, which is to be held in Madison Square Garden, New York City, beginning December 28. Clinton R. Mabley, the general manager of the Salon, states, however, that no public announcement of the plans will be made until the return of several members of the Salon, who are now in Europe.

A handsome lithograph banner is being sent out by the Continental Caoutchouc Company, 43 Warren street, New York, J. M. Gilbert, general manager. It represents a landscape scene, with a lake and mountains in the distance. In the center of the picture is shown a touring car, and alongside the roadway is a signboard advertising Continental tires. The banner is prepared in such an artistic way that at a short distance it resembles an oil painting. It is intended for automobile clubs, garages, and automobile show rooms.

New York autoists who enjoy an occasional burst of speed in the open country should be careful not to indulge in this pleasure on the Sawmill River road around the towns of Ardsley, Elmsford and Briarcliff. It was at Briarcliff that John D. Rockefeller was arrested and fined $30, and prominent autoists have suffered considerable annoyance and delay along this particular stretch. Beyond Briarcliff, all traps cease, and the traffic on the highway is so slight that a fair speed may be maintained.

Owing to the enormous growth of the W. D. Newerf Rubber Company, which was recently opened in San Francisco to handle Goodyear tires exclusively, it has been found necessary to incorporate with a capital of $100,000, fully paid up. The business of the company has more than doubled in the past year and, with new stores in San Francisco and Fresno, and agents in Portland, Ore., Seattle, Wash., San Diego, Riverside and many other California and coast towns, this will doubtless be surpassed during the coming year. The San Francisco headquarters are at 506 Golden Gate avenue, and though but recently opened, it has done a remarkable business in Goodyear tires.

The trite old saying, "Man, know thyself," should, as far as some autoists are concerned, be transposed to "Man, know thy car," says a well-known Columbia dealer. "It is really surprising how many owners know but little of their machines and when beset with troubles are utterly helpless. When a man comes into our establishment and buys a car we do everything possible to school him thoroughly, so that when thrown upon his own resources he will get along smoothly, and have found that the plan works well. Recently a customer of ours purchased his first car and, after a course of thorough instruction from us, went his way. Subsequently we heard from him in another part of the contry, and he stated that he experienced no trouble whatever in operating the car himself, owing to his early teaching."

NEW AGENCIES ESTABLISHED.

Olier & Worthington is the title of a firm just organized in Los Angeles, Cal., to handle various lines of automobile specialties and supplies on the Pacific coast. They will act as manufacturers' agents. Both members of the new firm are well known in the auto accessory trade.

The Colt Runabout Company of Pennsylvania has just been formed by William M. Edison and Hays M. Fernald to handle the 40-horsepower, six-cylinder Colt runabout in that State. An agency will be opened at the Bellevue-Stratford garage in Philadelphia, and in the near future an office will be established in Pittsburg. Mr. Edison is a son of Thomas A. Edison, the inventor.

The Calhoun-Bancroft Company, Seattle, Wash., has just been organized to handle, as direct representatives of the makers, a line of automobile accessories, and particularly ignition apparatus, on the North Pacific Coast, their territory including Washington, Oregon and British Columbia. Mr. Calhoun is an expert electrician and battery man and Mr. Bancroft has had considerable experience in the general supply line, having formerly been with the Motor Car Supply Company and the Franco-American Auto Supply Company, both of Chicago.

PERSONAL TRADE MENTION.

George Arbuckle, western supervisor for the Winton Company, has returned to Cleveland, after a three months' trip to Pacific Coast points.

Thomas Moore, for several years publicity manager for Wyckoff, Church & Partridge, New York City, has resigned his position with that house, with a view of connecting himself with a factory.

Peter S. Steenstrup, of the Hyatt Roller Bearing Company, Harrison, N. J., will sail August 28 for a European trip in the interests of the Hyatt bearings. He will visit Great Britain and the Continent.

F. A. Babcock, Jr., sales manager of the Babcock Electric Carriage Company, of Buffalo, started late in July on a trip to visit the agencies in the West. He will go as far as San Francisco and then up to Seattle. From the Middle West he writes that the outlook for increased business, not only in the electric line, but in the others, is very promising.

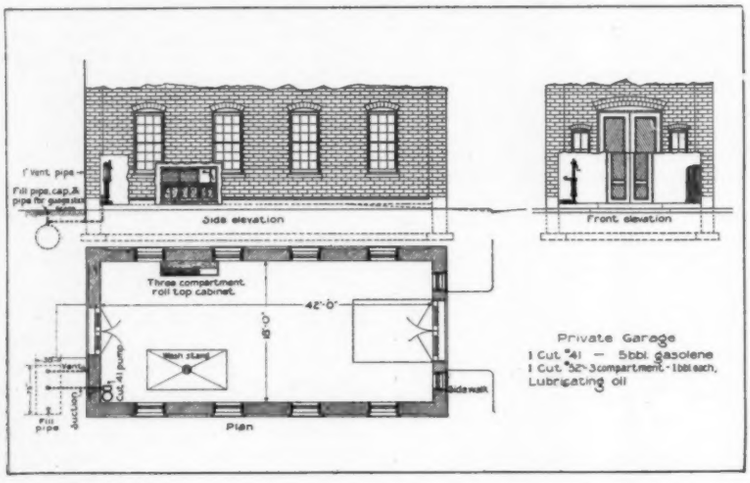
"NED" BROADWELL, FISK SALES MANAGER.

E. H. Broadwell, head of the Detroit branch of the Fisk Rubber Company for a considerable period, is to make his future residence at Chicopee Falls, Mass., where he will be the general sales manager of the Fisk Company. Widely known and with years of experience, Mr. Broadwell is particularly well fitted for his new place.

INFORMATION FOR AUTO USERS.

Up-to-Date Gasoline Storage.—Owing to the frequency with which S. F. Bowser & Company, Fort Wayne, Ind., have been called upon by architects, builders and owners to furnish plans for the installation of gasoline and lubricating oil storage equipment, they have decided to publish the data gathered in complying with these numerous requests in book form. This has recently been done, the work being entitled "Plan Drawings of Model Oil Storage Systems," and, as its name indicates, it is chiefly devoted to illustrating actual installations that have been carried out, all necessary dimensions being given. Every phase of the subject is treated, both from the point of view of the private owner as well as for the benefit of public garages of every size, tank capacities and dimensions, sizes of oil houses, pipe layouts and all other necessary data for the equipment of garages, factories and stores with gasoline and oil-handling devices being provided.

The plan shown herewith is a reduction of one of many drawn for a private garage, and shows the position of the buried tank, size of hole to be dug and space occupied by pumps for both oils. Other plans illustrate the arrangements of a number of both private and public garages. Copies of the book will be sent gratis on application to the publishers.



SPECIMEN PLAN OF BOWSER MODERN GASOLINE AND OIL STORAGE.

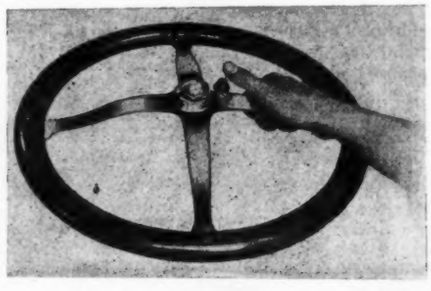
Battery-Charging Rheostats.—In the average garage there is always apt to be considerable difference in the number of cells in the batteries of the cars to be charged, and the problem of handling the current so as to give each the proper amount of current through the charge has been an annoying one to the garage manager. To meet this condition the Ward Leonard Electric Company, Bronxville, N. Y., has developed a line of rheostats suitable for charging batteries having any number of cells, from 1 to 44, at any amperage between maximum and minimum charging rates of from 2 to 80 amperes. Another great advantage of these rheostats is the addition of a combination overload and underload circuit breaker, which will not only protect the machine during the charge but automatically open the circuit upon its completion, so that a machine may be connected up and the switch set to open as soon as it is fully charged. The Ward Leonard Electric Company makes these rheostats in various styles, adapted for mounting on the back of a switchboard, on a wall or on the floor, their list including four different sizes.

The following table gives the capacities and resistance of the four sizes listed:

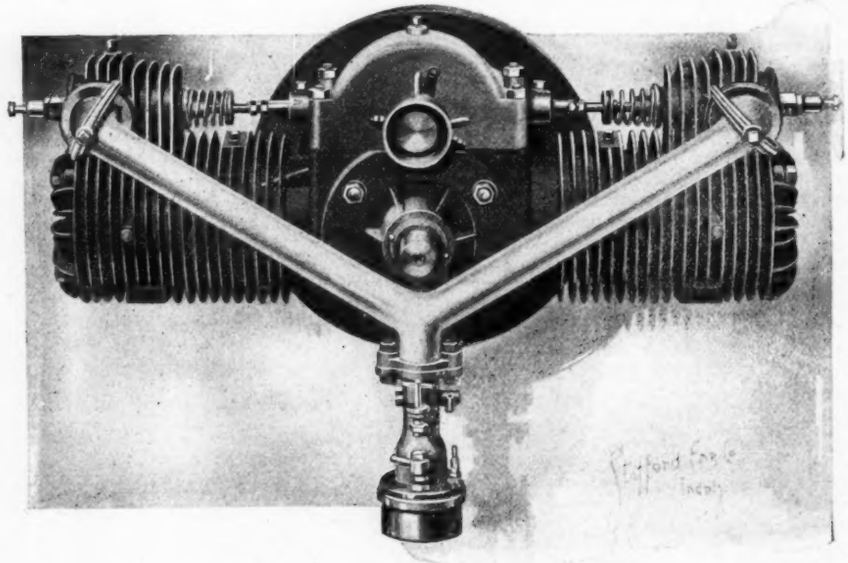
No. of Cells Lowest.	No. of Cells Highest.	Charging Current Maximum.	Charging Current Minimum.	Resistance Ohms. Approx.
1	44	20	2	62
1	44	40	4	31
1	44	60	6	21
1	44	80	8	15.6

De Tamble Buggy Motor.—In response to the widespread demand for the buggy type of automobile, the Speed Changing Pulley Company, Indianapolis, Ind., is just placing on the market a light, powerful and smooth-running air-cooled motor specially designed for this service, as well as for light delivery wagons. Although its dimensions are only 30 inches long by 16¼ inches wide and 17 inches high, including flywheel, it shows 10-12 horsepower on actual brake tests. It is made of the same materials and with the same attention to detail that has always characterized the four-cylinder motors turned out in numbers by this company. In testing, it has been run under full load for a period of six hours without showing any signs of overheating. The crankshaft is a drop-forging of liberal dimensions, made from high-grade steel and finished by grinding, which is also true of the piston and piston rings. The connecting rods are of special carbon steel. The wrist pins are ground and run in plastic bushings of superior quality. The inlet valves are of the automatic type, and the exhaust valves are mechanically operated. Timing gears are of hard bronze and steel, accurately cut from the solid and run in oil. In short, the design and construction of the new De Tamble buggy motor is such as to fit it for constant hard service in the hands of inexperienced operators. The motor complete, including flywheel, tips the scales at 185 pounds, and its compact design may be judged from the accompanying illustration.

The Petite Safety Switch.—Every autoist knows the inconvenience of having to lean over to reach a switch on the coil box, or some other equally inaccessible position, in order to stop the car or to cut out the engine on a long coast, or any one of the numerous occasions on which it is not alone convenient but helpful to both driver and motor to be able to cut out the latter. Racing drivers have long recog-



HOW THE PETITE IS OPERATED.

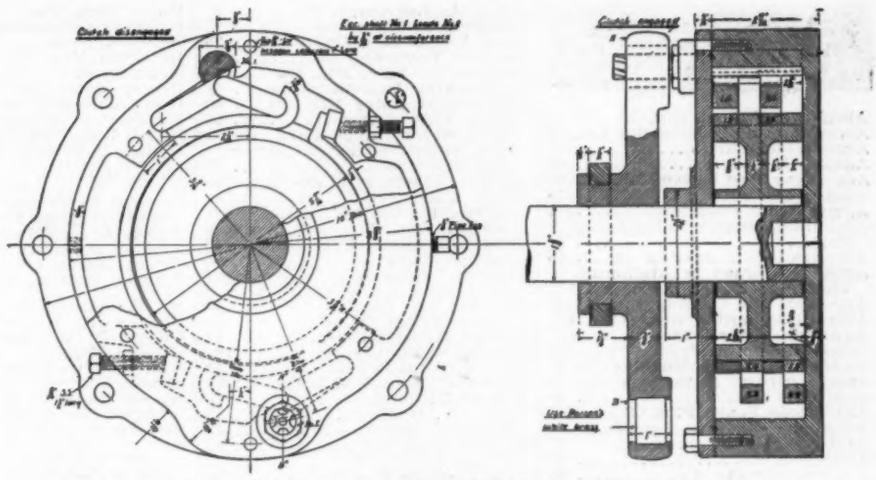


THE NEW DE TAMBLE AIR-COOLED MOTOR FOR BUGGY USE.

nized this, and the majority of cars in the long road races have been equipped with small switches mounted on the steering wheel. Under the name of the Petite switch, the American Motor Works, of Grand Rapids, Mich, are placing a device for this purpose on the market. As its name indicates, it is extremely small and unobtrusive and it may readily be applied to any car without trouble, but one screw being necessary to fasten it, and, as the makers also state, it is always "right under your thumb," instantly ready for an emergency stop. The skillful driver not only saves gasoline, but he also saves his batteries, and this is his most valuable aid in accomplishing both, there being a great many times when it is safer to have the car turning the engine over than the reverse. But more than either of these, it saves tires, because it means a great deal whether the rubber is merely rolling over an obstruction or dropping into a hole or whether it is being forcibly dragged or pushed through these tire-destroyers.

Bullard Speedometers.—For the 1908 season J. H. Bullard, Springfield, Mass., will market two types of the well-known speedometers that bear his name. Both are now ready for delivery, and the chief feature of one will be its equipment with a maximum hand, so arranged that by pressing a button, not shown in the illustration, it will remain stationary at the maximum speed, and by releasing the button it will instantly return to the speed at which the car is then traveling. The advantages of this construction are that it does not bring any drag on the regular recording hand nor impair its accuracy to the slightest degree, and it is as free and as sensitive to the speed changes as though this extra hand were not a part of the instrument, nor does jolting or jarring affect it in any way. At the same time it does not complicate the instrument in any manner, and, except when the button is called into play, it operates exactly in the usual manner, as if this additional hand were not present. By this construction there is no second hand to watch and no possibility of forgetting to release it at the proper moment, as a glance is sufficient to show whether it is free or locked. The other type is the usual style, without the addition of the maximum hand, and both are made with the same painstaking attention to detail and accuracy that has always characterized the Bullard. In operation, the shaft only turns one and a half times faster than a 30-inch wheel, thus making all the parts very slow-moving. The shaft is attached to a patented universal bracket, and can be applied to any car so that all short bends are avoided, thus insuring long life to all the parts and connections.

THE NEW BULLARD FOR 1908.



ELEVATION AND CROSS-SECTIONAL VIEW OF THE WARNER FRICTION CLUTCH.

New Type of Auto Horn.—Among the catalogues just to hand is one of the Automobile Supply Manufacturing Company, Driggs avenue, Brooklyn, N. Y. It is devoted to the line of automobile horns turned out by this firm, and shows a wide range of styles and types, including ten newcomers and one wholly new design, which is the work of Louis Rubes, the president of the company. The accompanying illustration shows a sample of the oval-bell type horn, with "close-twisted" coil, which gives a rich, penetrating note that carries to a considerable distance. The extent of the demand for the line of horns turned out by this firm may be gauged from the fact that overtime work is being carried on at both of its plants at Driggs avenue and Emerson place, Brooklyn.

OVAL BELL HORN WITH CLOSE COIL.

New Warner Friction Clutch.—Sudden gripping, binding tight or becoming so loose as not to transmit more than a fraction of the power of the motor, are some of the ills that the ordinary type of friction clutch is heir to. In contrast with this, the Warner Clutch Company, 1461 Michigan Avenue, Chicago, Ill., has been marketing a type of clutch which not only eliminates these ills, but also provides insurance against damaging either the car or the tires by means of its ability to let go when the occasion demands, as well as to engage easily and hold fast regardless of how much power the motor is developing. It consists of a series of crucible steel springs or bands in frictional contact with the polished surface of a cast-iron drum, the whole being enclosed in a dustproof case and running in an oil bath. The steel bands are designed to transmit the power of the most powerful automobile engine made, while the drum is glass hard, so that the wear is practically a negligible factor. Provision is made for adjustment in the shape of compensating screws, one or two turns of which are sufficient to take up any play after a season's use. The steel bands are good for two or three years' steady service and can be replaced at trifling cost, thus making the clutch as good as new. As the makers state, "When properly adjusted the Warner clutch, when it is 'all in,' will slip just below the breaking strain of the weakest point in the system of which it is a part, and its frictional resistance should be set slightly below that of the driving tires on a dry road or street pavement."

NEW BOOKLETS RECEIVED.

"Lytle's Great Run" is an illustrated folder dealing with Herbert Lytle's last and most notable performance on a track with a Pope-Toledo car. It can be obtained from the Pope Motor Car Company, at Toledo, or from their agents.

Safety when automobiling, due to the absence of skidding and tire weakness, forms the theme of "Safe and Sane Automobiling," a booklet published by the Leather Tire Goods Company, Newton, Upper Falls, Mass. The Woodworth tread is the safety factor offered by the authors of the book, the claims of which are strongly presented in the 16 illustrated pages.

With the object of making known the attractions of the lake country of central New York, a well-prepared guide-book for the automobilist has been published by the Glen Springs Garage, Watkins Glen, N. Y. The country from Binghamton to Buffalo is dealt with and a large number of excursions from Watkins Glen to points of interest are mapped out. The book contains road maps, road directions and views of the country traversed.

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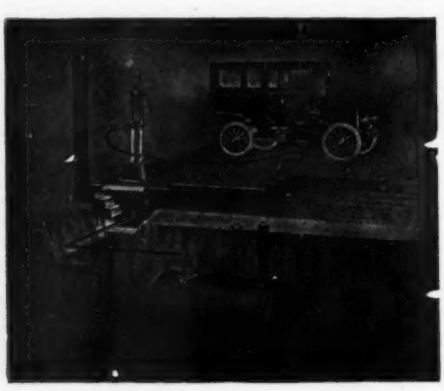

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